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Vol. LXXXV, No. 12 SEPTEMBER 22, 1927 Per annum $4.00 Per Copy 10 Cents

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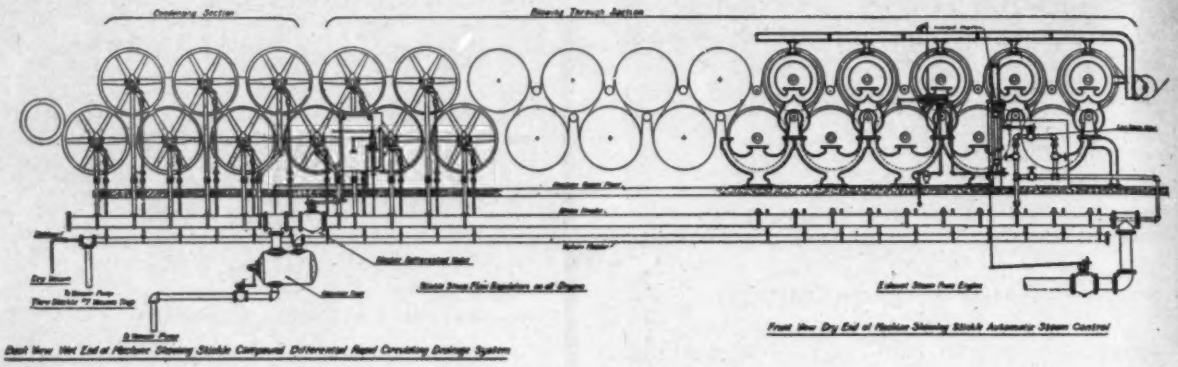

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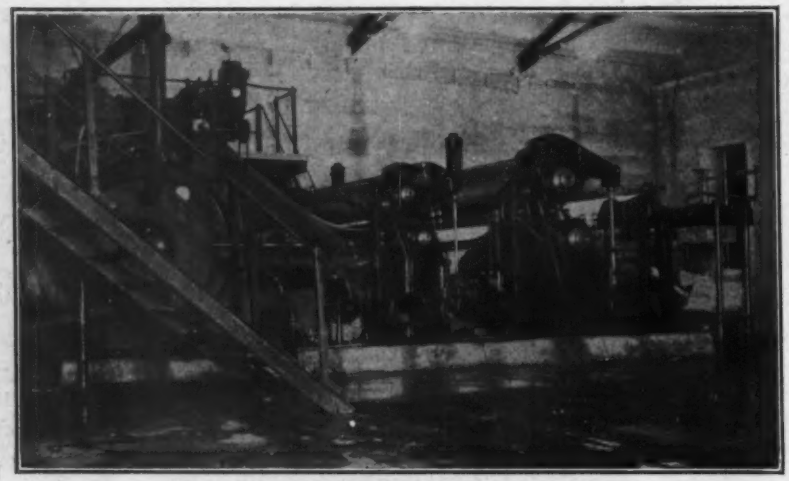

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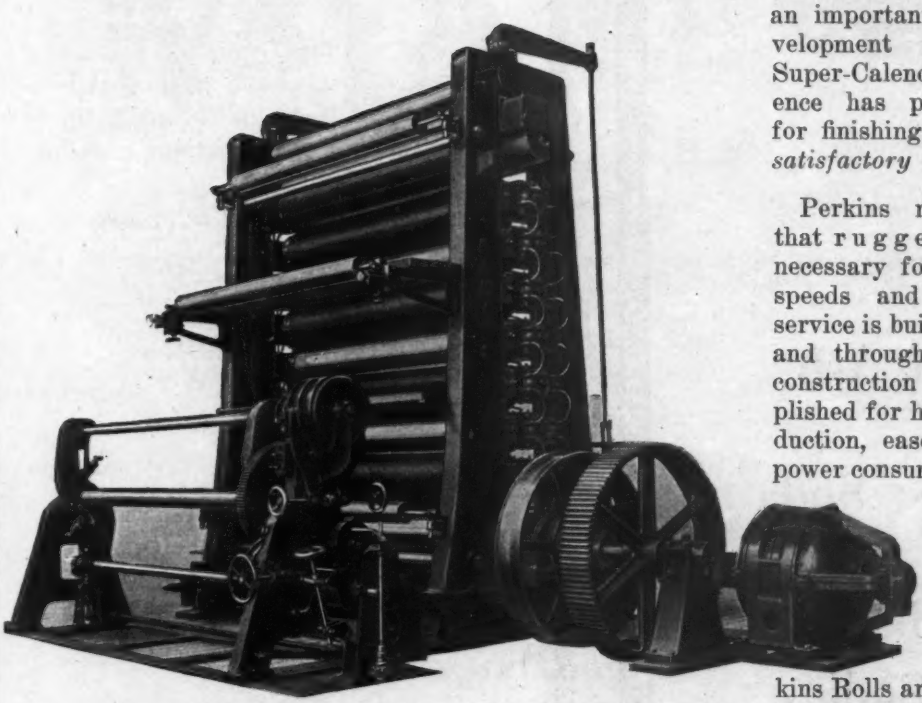

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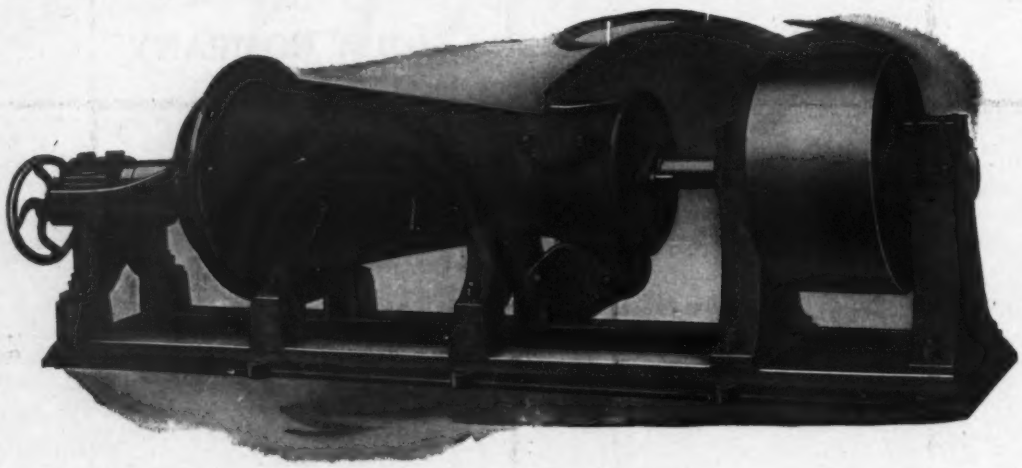

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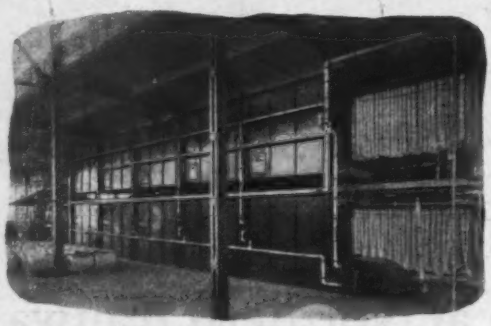

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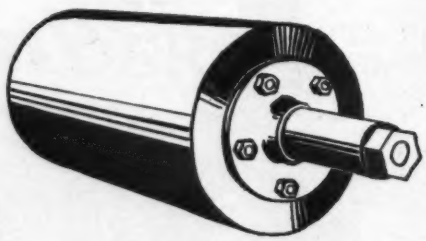

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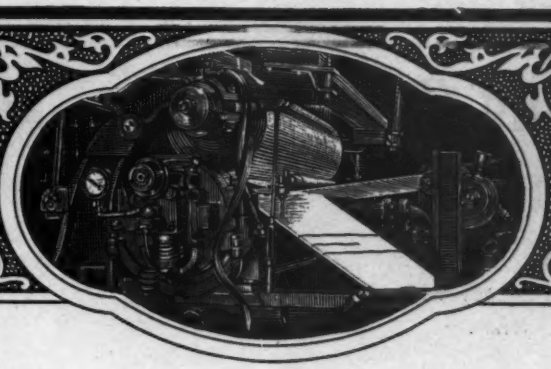

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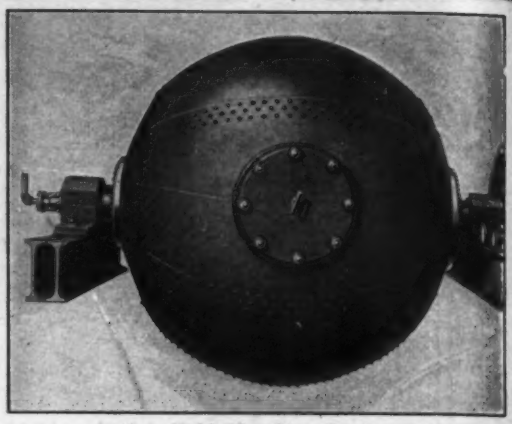

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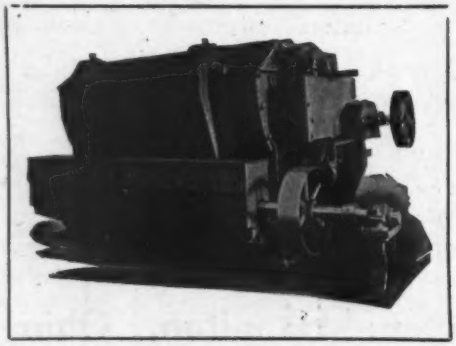

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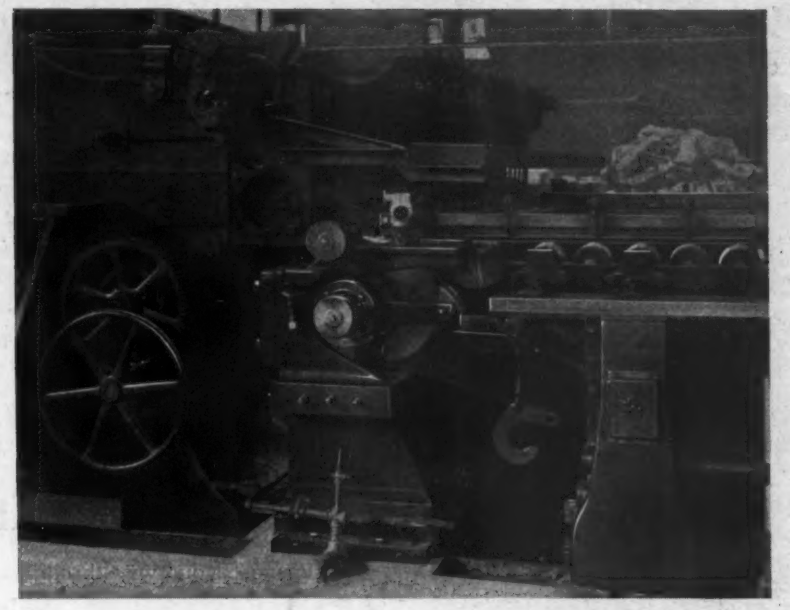

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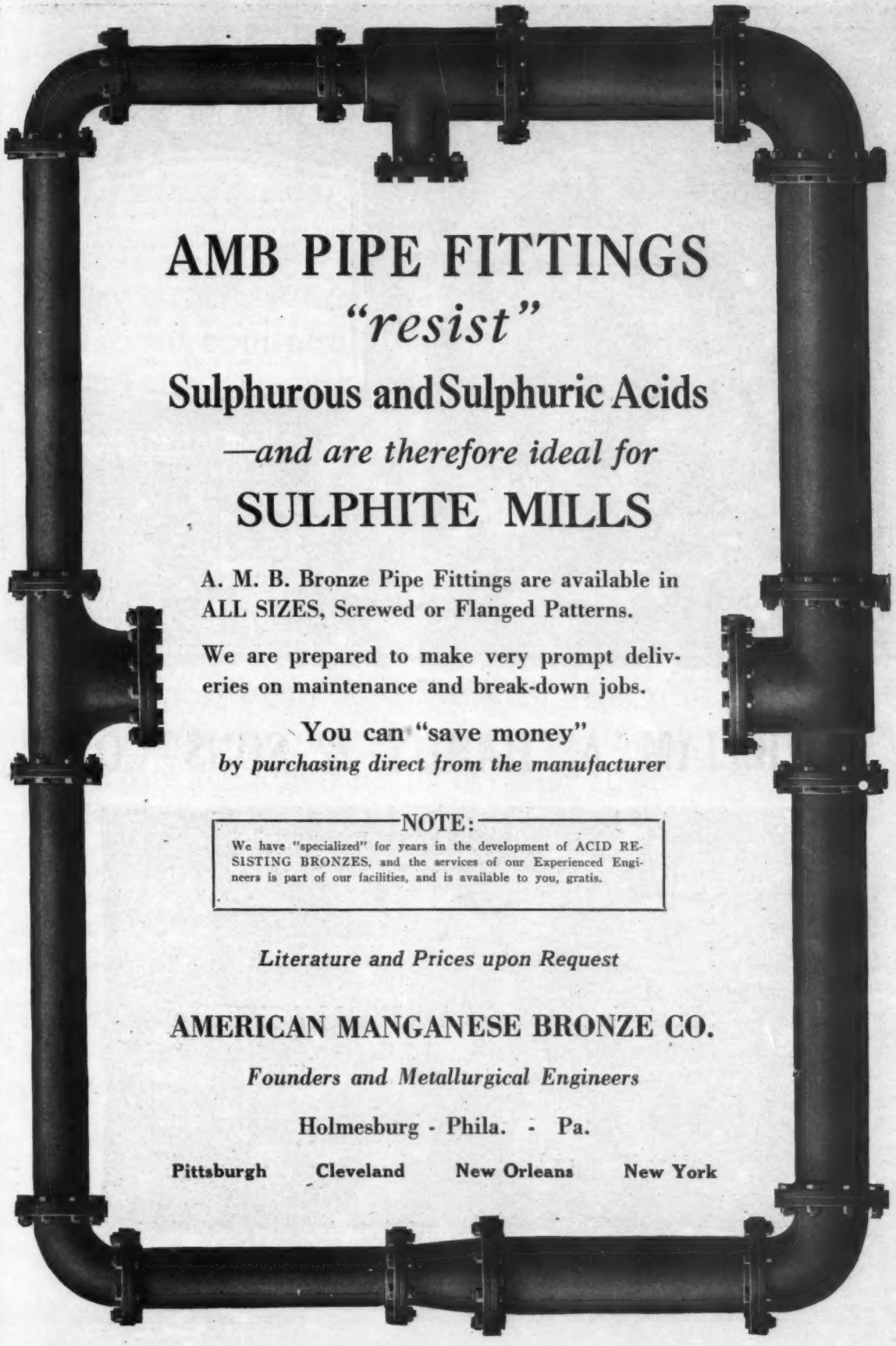

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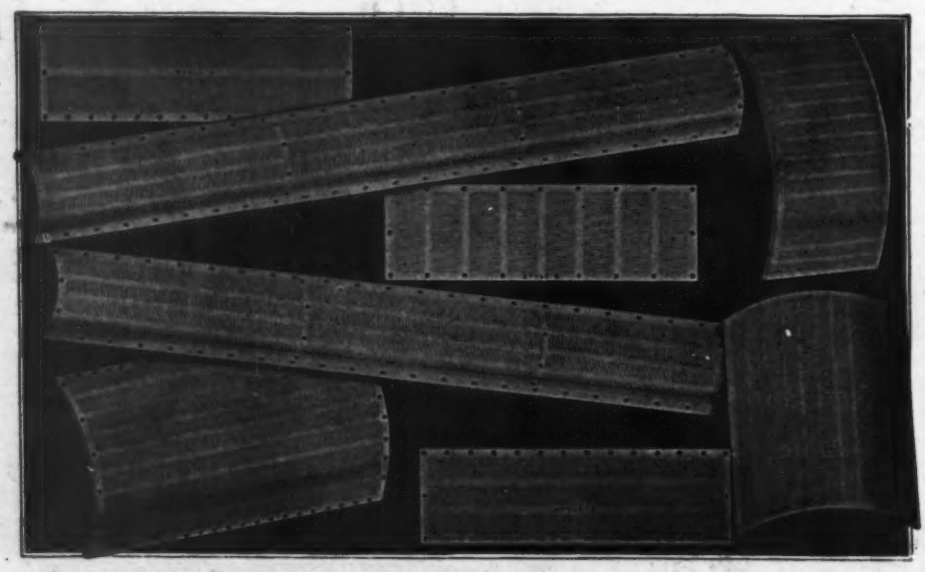

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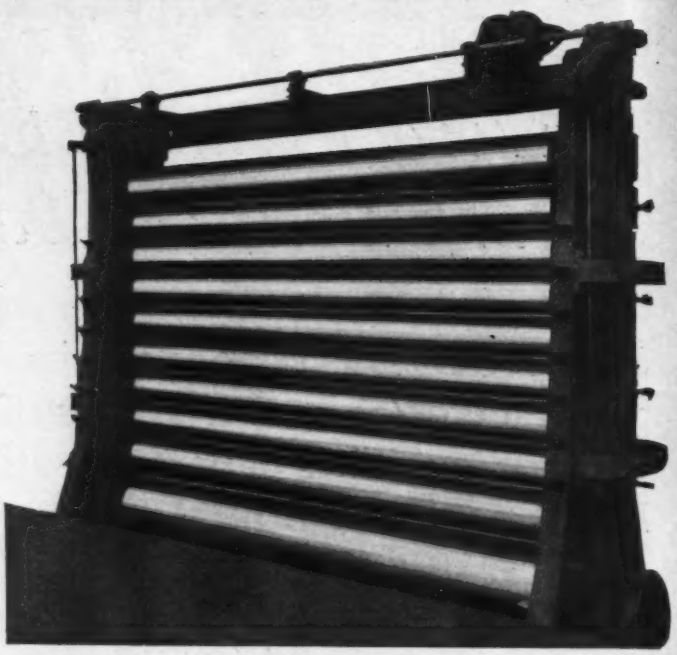

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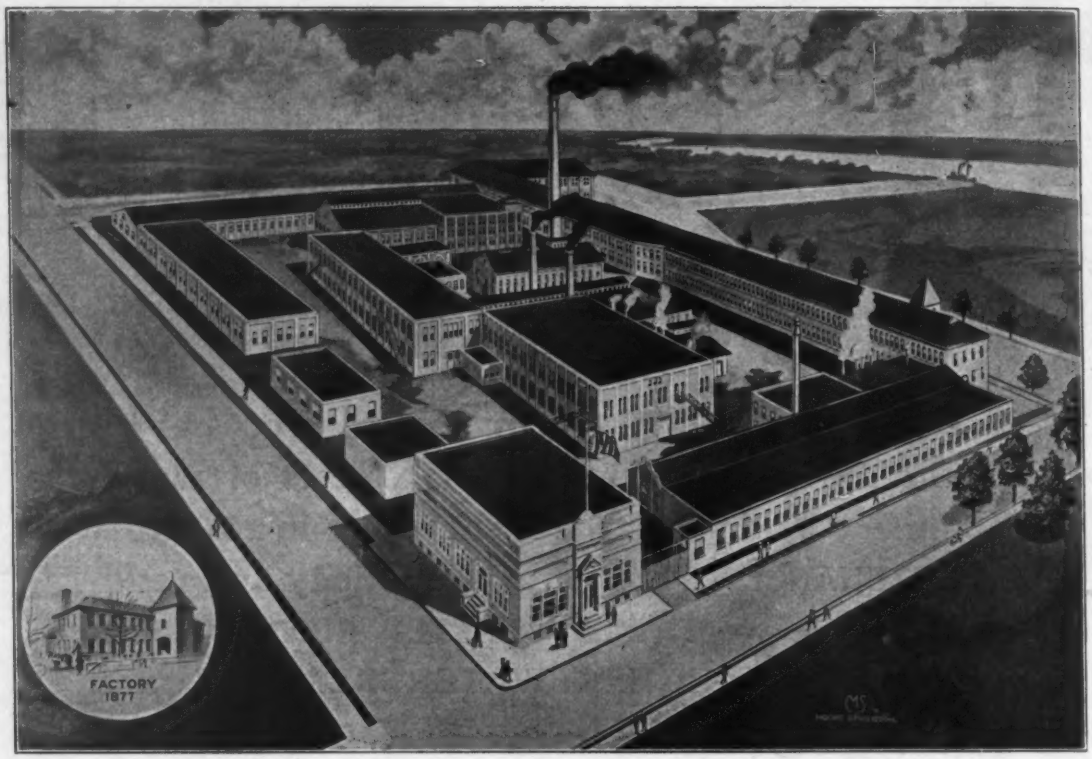

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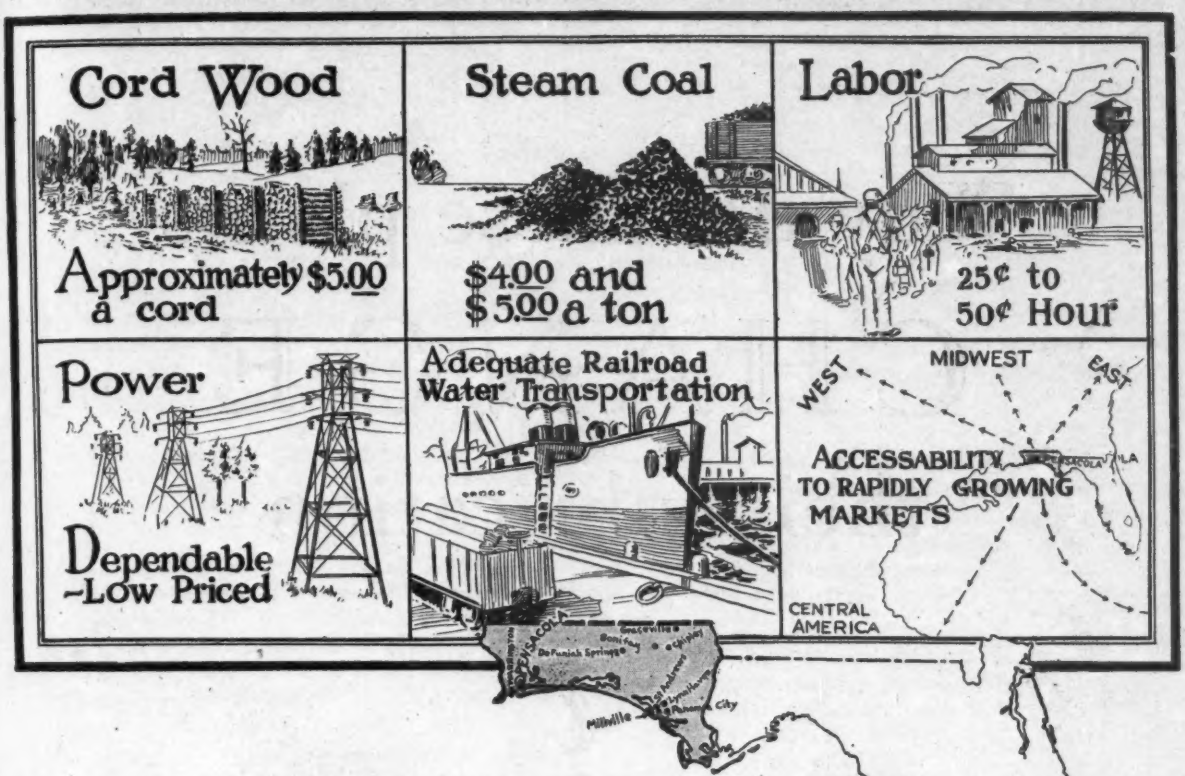

Lower Operating Costs Larger Profits In WEST FLORIDA

THE paper making industry is following the textile industry *South!* Comparative figures prove it: Between 1917 and 1925 wood pulp production in the United States as a whole increased less than 10% while during the same period, wood pulp production in the South increased *more than* 50%.

The South's attractive factors of location, illustrated above, are responsible for this migration. Nowhere in the South are these factors more predominant than in West Florida, where vast timber reserves, abundant native labor, dependable and low priced power, reasonable mill sites, and rapid transportation unite with close market contacts — not only with the growing South but with the Midwest; South and Central American countries and world markets!

For detailed information on West Florida, as a location for your paper mill, write to our

NEW INDUSTRIES DIVISION

West Florida Towns Served by this Company

Bonifay	Lynn Haven
Chipley	Millville
DeFuniak Springs	Panama City
Graceville	Pensacola
	St. Andrews
	Warrington

GULF POWER COMPANY

Pensacola, Florida

Why did these plants CHANGE their lubrication ?

* Chapter I *

The all-sufficient reason...

They saw the fallacy of buying oils on a price-per-gallon basis and discovered for themselves that what an oil does, not what it costs, determines its value.

Each of these plants simply wanted results. They called in the world's leading specialists in lubrication as the people most likely to produce results.

In every instance we had the support of the plant officials and the cooperation of the plant personnel. Much of the credit for the lubrication results obtained is due to their support and cooperation.

* Chapter II *

How correct lubrication pays

The economies possible through correct lubrication vary with each individual plant. Some of these economies translate more easily into dollars and cents than others.

The following examples cover a sufficiently wide range to illustrate the point.

$50,000 saved in one year: A large automotive manufacturer made a friction test on a group of ten machines in his plant. Gargoyle lubricants saved $502.50 in h.p. in one year. On 100 groups of similar machines this manufacturer figured his savings through correct lubrication at $50,000 per year.

SHORT STORIES OF EXPERIENCES IN CORRECT LUBRICATION

7-year service on 1 charge of oil: Michigan Power Plant filled their turbine system with Gargoyle D.T.E. Oil Light in January 1920. Only normal make-up oil added to system in 7 years. No time out of service charged to lubrication. Oil still in good condition.

105 vs. 55 mine cars to a load: A Pennsylvania mine experienced difficulty in hauling 55 cars to a load when lubricated with black oil. With Voco Mine Car Grease in service 105 cars were regularly hauled over same track with ease.

Maintenance costs reduced $26,986: A well-known manufacturing plant increased its production 60% in a recent year, while maintenance costs increased only 31%. Of the savings in maintenance costs, the management attributed $26,986 to changes in lubrication.

$12,983 saved in one year: A Wisconsin paper mill installed Gargoyle lubricants. Oil bill first year reduced $5,295; savings of $7,688 wages of five oilers and one oil carrier also recorded.

To keep 6000 men at work: 6000 workmen in a mid-western plant remained idle 18 hours while an engine, broken down because of incorrect lubrication, was being patched up. Preferring not to repeat the experience, plant officials called in Vacuum Oil Company to prescribe exactly suitable oils.

3½ times as many h.p. hours per gallon: A City Light and Power Company ran two Diesel units 14,500 h.p. hours per gallon with Gargoyle lubricants, compared with a third Diesel which ran only 4000 h.p. hours per gallon with (x) oil. Result as above.

36.4% Reduction in Babbitt consumption: A busy Eastern mill reduced its cost for rebabbitting at the above rate.

No interruption in 13 years: A mine in the East operated a 10,000 h.p. hoisting engine (hoisting 800 3-ton cars per 24 hours) 13 years without a single interruption due to faulty lubrication.

Saved $4880: A cement mill made this saving in power costs in one year when change was made to Gargoyle lubricants.

3 vs. 12 Turbine Oil System Cleanings a Year: A large Electrical Generating Station found 12 lubrication system cleanings a year necessary with (x) oil. With Gargoyle lubricants in service, system was cleaned but 3 times annually. No sludge found. Make-up oil was reduced 65%.

$4755 oil and labor savings: An Indiana coal mine figured the above annual saving on eight loaders when lubricated with Gargoyle lubricants.

A good example to follow . . .

EVERY day the Vacuum Oil Company is helping thousands of plants to effect operating economies in greater or less degree.

In every case a fresh viewpoint of lubrication is being taken. Results are considered more desirable than cheap-priced oils. The plant personnel and our personnel work together for a common objective—results.

* *

NOTE: We will gladly send your operating staff copies of our authoritative treatises, "Pulp and Paper Mill Lubrication," and "Bottle Oilers."

Vacuum Oil Company

Headquarters: 61 BROADWAY, NEW YORK

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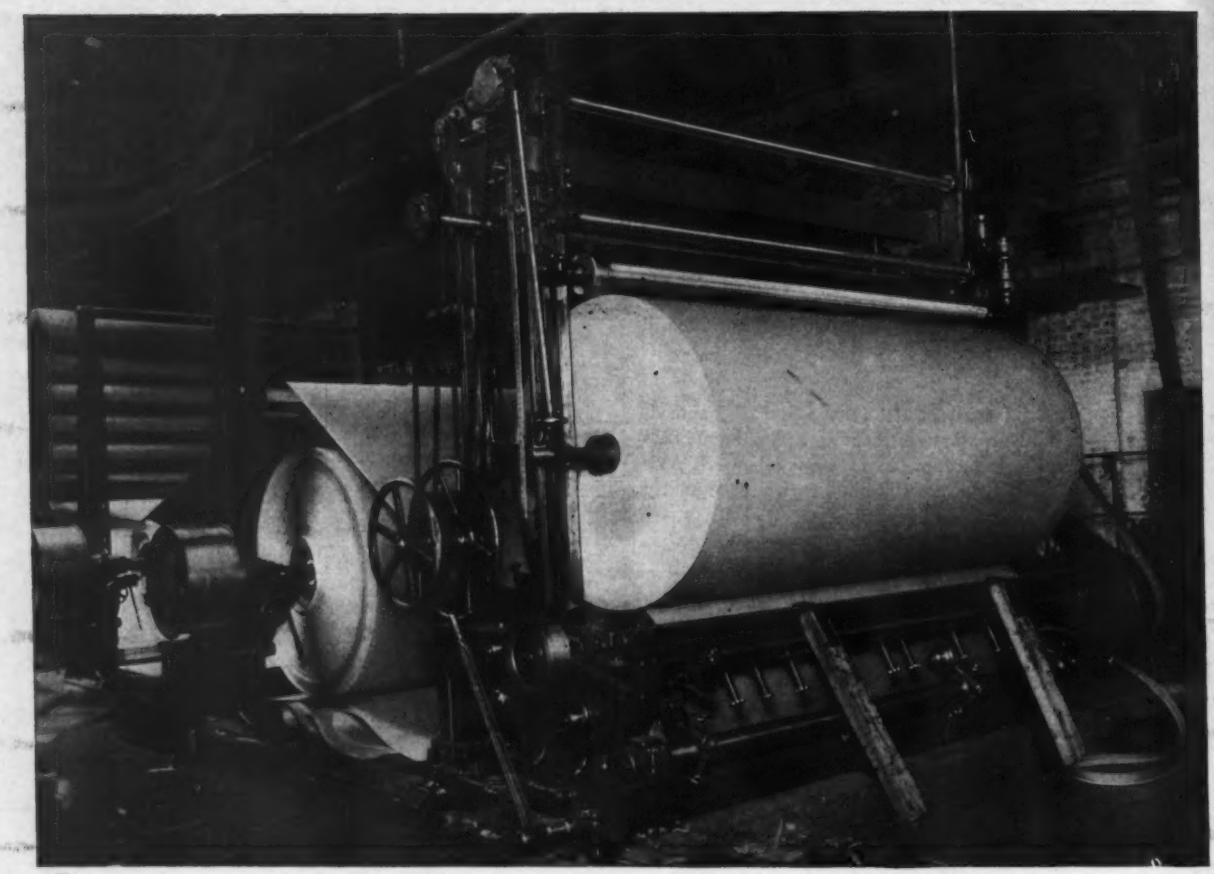
Lubricating Oils

A grade for each type of service



110" Type "CA" Langston Slitter and Winder recently installed in mill of Container Corporation of America, Cincinnati, Ohio.

For good corrugating rolls

EVERY corrugator knows full well how important it is to have rolls that are tight and of uniform density. The making of rolls that meet these conditions presents no difficulty whatever in mills that use the Langston Slitter. With the Langston winding principle it is a simple matter to wind rolls that are tight from the very first wrap, and the desired tightness to be maintained right up to the maximum diameter, which means uniform density.

Another important Langston advantage: The Langston Shear Cut insures rolls absolutely free of dust. Trouble due to dust or lint clogging the silicate system can never occur when the rolls are made on a Langston.

Is it any wonder that so many mills that supply rolls for use in corrugators as well as on solid fibre pasters or in other converting operations, use Langston Slitters!

A FEW of the mills making rolls for corrugating on Langston Slitters are:

Robert Gair Company, (6 *Langstons*)
Container Corp. of America, (6 *Langstons*)
Kieckhefer Container Co.,
Brown Paper Mill Co., (4 *Langstons*)
National Paper Products Co., (3 *Langstons*)
American Boxboard Co., (2 *Langstons*)
Terre Haute Paper Co., (3 *Langstons*)
Foster Boxboard Co.

SAMUEL M. LANGSTON COMPANY, CAMDEN, NEW JERSEY
A. H. COX & COMPANY, INC., SEATTLE, WASHINGTON

CLEAN SHEAR CUT CUT

LANGSTON SLITTERS

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National Croceine Scarlet FP Conc.
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HARTFORD CHARLOTTE TORONTO

NATIONAL DYES

PAPER TRADE JOURNAL

ESTABLISHED 1872

THE INTERNATIONAL WEEKLY OF THE PAPER AND PULP INDUSTRY AND THE PIONEER PUBLICATION IN ITS FIELD

FIFTY-SIXTH YEAR

Published Every Thursday by the

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PAPER TRADE JOURNAL

With Which Is Combined

PAPER

Vol. LXXXV, No. 12 — Thursday, September 22, 1927

Limilou News Print Mill Nearing Completion

Installation of One Paper Machine in Anglo-American Pulp & Paper Co.'s New Plant, Located Near Quebec City, Already Started—First News Print Will Probably Be Manufactured in November—Company Spending Twenty Million Dollars on Project —International to Exercise Newfoundland Options

[FROM OUR REGULAR CORRESPONDENT]

MONTREAL, Que., September 17, 1927.—The Anglo-American Pulp and Paper Company's mill, now under construction at Limoilou, near Quebec City, is progressing on schedule, and the buildings will be completed very soon. Installation of one of the paper machines has been started, and it is expected that November will see the first news print being manufactured. The company is spending $20,000,000 on the project.

I. P. to Take Paper Plants

The International Paper Company of New York has decided to exercise its options on the Corner Brook and Gander River Valley paper plants. It was said the final price of the Gander River plant was conditional upon the settlement of certain questions relative to the volume of power in that section of Newfoundland. The two plants are the largest in Newfoundland engaged in the manufacture of paper.

New Paper Town

Though only in existence a few months the new town of Dolbeau, located fifteen miles northwest of Lake St. John, Que., has already reached an advanced stage of development. The town was created by an act of the Legislature at the last session to be the headquarters of the Lake St. John Paper and Power Company. Forest at that time was all that existed at the point where the town now stands. Today houses have been erected for officials, the staff and employees of the company. A Catholic Church has been built in the center of the city, a convent nearby and a city hall. The church is a very spacious one, having accommodation for one thousand worshipers.

Beginning in January the mills will produce news print at the rate of 200 tons per day. Already the population has reached over 1,500. The convent and several schools are already receiving pupils.

The Celanese Company has completed the erection of three buildings, and plans are for the increase of these to ten. Dr. Camille Drefus, president of the company, who with his brother invented the celanese process, said when it was decided to locate the industry in Canada there was a thorough investigation of the Canadian field. The decision to locate it in the Province of Quebec was due to the attitude and assistance of Premier Taschereau. He added that the officials at Ottawa, and in particular the Hon. J. A. Robb, Minister of Finance, had given every possible aid and assistance in the difficult work of starting the venture.

The past week has seen the official start of production in the plant of the Canadian Celanese, Ltd., at Drummondville, Que., with an employment roll of 300 and a prospective roll of 500 employees within a short time. Indeed it is expected that the company will eventually have one of the largest industries in the Province. The machinery was started by an electric button pushed by Premier Taschereau, who in the course of his speech, said the Provincial Government welcomed the investment of foreign capital in the Province, adding, "We want to bring in new industries, and we are ready to do all possible in that direction. We are not afraid of foreign capital. We invite foreign capital to join with us in developing our natural resources and creating industries here. Let the capital of England and of the United States come here as much as it wishes and multiply our industries, so that our people will have work. Such capital is welcome."

Laurentide to Merge?

Rumor is again busy with the possibility of the Laurentide Company joining in a huge merger of news print interests in the Province of Quebec. On the strength of these rumors there is much speculation in the company's stock, which has registered a sharp rise on the Montreal Stock Exchange.

Shawinigan Enlarging

Following the announcement of the Shawinigan Water and Power Company's move to increase the authorized capital of the company, notice has been given that all the company's 5 per cent thirty year mortgage bonds are to be redeemed with a premium of 10 per cent. The company has also announced the forthcoming issue of new stock to shareholders, in the ratio of one new share of stock for every eleven shares held. The price will be $50 per share. The stock is now selling at over $90 per share.

In addition to various extensions, it is now regarded as likely that the company will undertake the development of the Carillon Falls, on the Ottawa River, near Montreal, where a quarter of a million horse power is available, under the control of the Quebec Government and with the consent and co-operation of the Ontario Hydro-Electric Commission which would take a large portion of the power. Representatives of the two Provinces are to meet in conference on the subject in November.

To Make Paper Bags at Cleveland

CLEVELAND, Ohio, September 19, 1927.—The Mosier Paper Bag Company, of New York, has leased for five years at $30,000, 12,000 square feet of floor space in the Pennsylvania Railroad warehouse building. The space will be used for paper bag manufacture.

Demand for Paper Somewhat Spotty in Boston

While Some Distributors Report Uneven Market Conditions, the Volume of Sales Continues to Expand Materially—Box Board Request Falls Off, Due to Recently Advanced Quotations—Paper Stock Prices Remain Practically Unchanged

[FROM OUR REGULAR CORRESPONDENT]

BOSTON, Mass., September 19, 1927.—Improvement in the volume of paper sales continues, although some of the dealers report a somewhat uneven market. Business has increased appreciably within the last ten days. Prices remain stable. It is stated that in some cases consumers are abstaining from placing big orders. In a few instances paper manufacturers have been making estimates in response to inquiries but the actual business has not yet matured.

Due to the advances in box-board prices, however, the demand for this commodity has fallen off to a considerable extent the last week. During the previous week, however, after the advance of filled news board to $50, and chip board to $47.50, a rise of $2.50 in each case, orders from consumers deluged wholesalers and manufacturers. An instance is noted in which a manufacturer had on his desk a pile of orders two inches high at the lower price.

Paper stock prices in most of the grades remain the same. A good movement has taken place in book stock, with the No. 1 heavy quotable at $1.35 to $1.45, and the No. 1 light at $1.15. Hard and soft shavings have also been wanted. Mixed papers have been selling, but as the supply is now catching up with the demand, the maximum price is around 62½ cents per hundred pounds, compared with a previous price of 65 cents. Box-board chip is quotable at 65 cents per hundred.

Fibre stocks are reported rather quiet, with little, if any, immediate demand for bagging and jute. In the new domestic rags, white No. 1 shirt cuttings are quotable at 12½ cents, compared with a previous quotation of 11¼ to 11½ cents.

New England Paper Men Meet

At the meeting of the New England Paper Merchants Association, held at the Harvard Club of Boston, September 15, it was voted to change the by-laws, providing for the annual meeting and election of officers in January, instead of November. The officers, however, will not take office until the March meeting. Three new members were elected, McAuliffe Paper Company, Inc., Burlington, Vermont; H. Berger Paper Company, Lawrence, Mass.; Andrews Paper Company, 54 India street, Boston, Mass. The total membership is now 43, the largest in the history of the association. President Charles A. Esty presided. Twenty-five members were present.

Carton Packing Discussed

Members of the Fine Paper Division of the association at a meeting held the same evening, discussed at considerable length the subject of carton packing of paper in preference to the present method, case packing. The majority of those present were not in favor of making a change. Much interest was expressed in the coming meeting of the National Association in Chicago, to be held October 24-26.

News of the Trade

A number of the Boston paper merchants will be represented at the annual conference to be held September 26-27 under the auspices of the Crocker-McElwain Company, Associate Mills, Holyoke, Mass.

It is reported that the Robertson interests of Hinsdale, Mass., have sold their properties to a hydro-electric company for a power plant.

Charles A. Esty and Edward D. Bement, Worcester and Boston respectively, of the C. A. Esty Paper Company, William B. Stevenson, John H. Brewer, and Philip Richardson, of the A. Storrs and Bement Company, attended the meeting of the Linweave Association at Springfield, Mass., September 16. This association is composed of jobbers of all sections of the country who make up the product of various mills into fine and commercial stationery.

Jonas L. Girth, of the Anacoussma American Trading Company, Paris, France, after passing a week in Boston, went to Chicago. Mr. Girth is an American citizen who formed this company. He is the manager in France and visits the United States semi-annually.

Hubert L. Carter, treasurer of the Carter Rice & Company Corporation, is on a two weeks' vacation at his summer home, Jefferson Highlands, N. H. J. C. Carter, secretary of the same company, is taking a two weeks' motor trip.

Charles H. Wood, president of E. Butterworth & Co., Inc., has returned from a two weeks' vacation at Equinox House, Manchester, Vt., and the Mansion House, Poland Springs, Me., accompanied by his wife and daughter.

Norman Harrower, president of Linton Bros. & Co., Fitchburg, Mass., J. W. Quimby, vice-president of the Allied Paper Companies, New York City, R. F. Chapin, salesmanager of Millers Falls (Mass.) Paper Company, and Maurice Park, salesman for the Holyoke Card and Paper Company, Springfield, Mass., were in Boston calling on the trade last week.

E. S. Brown, of the Charles A. Esty Paper Company, Worcester, Mass., was the August winner in the L. L. Brown Creative Selling Contest for paper merchants' salesmen. A similar award is made each month for the most constructive sale for any of the standard lines of the L. L. Brown Paper Company, of Adams, Mass.

Marathon's New Bond Issue

APPLETON, Wis., September 17, 1927.—As an aid in financing purchase of the Menasha Printing and Carton Company of Menasha, Wis., and its subsidiaries, the Marathon Paper Mills Company of Rothschild, Wis., is floating a bond issue totalling $4,000,000. The bonds are a first mortgage on the properties and draw interest of 5½ per cent.

The recent deal, which brought about the transfer of the Menasha company involved properties worth nearly $8,000,000. The value of the Menasha company was fixed at $1,900,000, and that of the Marathon company, the Lake Superior Paper Company, at $6,000,000. Timber lands owned by the Marathon company are valued at $609,000. Included in the Menasha Printing and Carton Company were plants at Menasha, Wausau, Baltimore and Ashland, among them the Lake Superior Paper Company of Ashland, Wis.

Finances of both companies are in a healthy condition, the reports show. The average annual consolidated net earnings for the last four and one-half years were $1,037,235, after allowing for depreciation and income taxes. Current assets are placed at $3,268,194, and current liabilities at $714,522. Net tangible assets are $9,364,964. The Marathon company owns 52,399 acres of timber land in Michigan, and 12,635 acres in Wisconsin. The company's outstanding common stock amounts to $4,325,850, and the preferred stock $600,000.

Proceeds of this bond issue will be used for the acquisition of the Menasha Company, the retirement of $1,447,000 outstanding bonds of the Marathon company, and of $944,600 of the Menasha company., The deal is considered quite an advantageous one because the carton company formerly purchased 40 per cent of its paper from the Marathon company.

Joint Meeting of Superintendents

PORT EDWARDS, Wis., September 17, 1927.—The program for the three days fall meeting of the News Print Service Bureau, Cost Accountants and Engineers and the Northwestern Division of the American Pulp and Paper Mill Superintendents Association is as follows:

Registration at First National Bank Building, Wisconsin Rapids, Friday, Saturday and Sunday, September 23, 24 and 25, Wisconsin Rapids and Port Edwards.

Under the auspices of Consolidated Water Power and Paper Company and Nekoosa Edwards Paper Company.

OFFICERS:

Roy Kelley, Chairman N. W. Div.; H. A. Skinner, Secretary N. W. Div.

LOCAL COMMITTEES:

Nekoosa Edwards Paper Co.—E. P. Gleason, Chairman, L. E. Smith, C. E. Youngchild.

Consolidated W. P. & P. Co., Walter L. Mead, Chairman, Lyman Beeman, Leo. Barrett.

Program for Friday, September 23rd, arranged by News Print Service Bureau.

9:00 to 12:00 A. M.—Mills at Biron, Wisconsin Rapids, Centralia, Port Edwards and Nekoosa open to visitors. Guides furnished. No visitors in the afternoon.

1:00 P. M.—Informal lunch at Bull's Eye Country Club, 60 cents per plate.

2:00 P. M.—Meeting of Cost Accountants and Engineers under the auspices of News Print Service Bureau. Superintendents and Managers are especially invited to attend this meeting.

PROGRAM

(1.) Measuring the Productivity of Repair and Miscellaneous Labor. By News Print Service Bureau.

(2.) Budgetary Control Methods of the Munising Paper Company. By E. F. Bartels, Auditor, Munising Paper Company.

(3.) Reduction of Loading and Shipping Costs. By J. H. Slater, Manager, Escanaba Paper Company.

(4.) Technical Control of Sulphite Cooking and Its Relation to Costs. By W. G. MacNaughton, Secretary, TAPPI.

6:30 P. M.—Dinner at Mead-Witter Hall. Arrangements by the Consolidated Water Power and Paper Company. Toastmaster, Stanton W. Mead.

(5.) Address of Welcome. George W. Mead.

(6.) Design and Construction of Modern Paper Mill Boiler Plant. By W. F. Thiele.

(7.) Operation and Cost Data on Modern Paper Mill Boiler Plant. By Ernest Belter.

(8.) Water Power Development. By W. M. White, Chief Engineer, Hydraulic Department, Allis Chalmers Manufacturing Company, Milwaukee, Wis.

Program for Saturday, September 24, Arranged by Superintendents Association.

9:00 to 11:30 A. M.—Mills at Biron, Wisconsin Rapids, Centralia, Port Edwards and Nekoosa open to visitors. Guides furnished. Mills closed to visitors afternoon.

11:30 A, M.—Meet at Registration office for inspection trip to Nepco Lake (the new water supply of Nekoosa Edwards Paper Company) with chicken chowder at John E. Alexander's Summer Home. Bring your bathing suits.

2:00 P. M.—Meeting at Port Edwards Auditorium.

PROGRAM

(1.) Technical Control in Pulp and Paper Mill. By Allen Abrams, Marathon Paper Mills Company.

(2.) Stock Regulators. By R. W. Haddock, Escanaba Paper Company.

(3.) Safety and Employment. By Walter L. Mead, Consolidated Water Power and Paper Company.

(4.) High Speed News Machines. By C. E. Macklem and C. T. Ramsden, Beloit Iron Works.

(5.) White Water Systems. By C. E. Youngchild, Nekoosa Edwards Paper Company.

(6.) Acid Recovery in Sulphite Mill. By A. D. Merrill, Stebbins Engineering Company.

6:30 P. M.—Dinner at P. E. Auditorium. Arranged by Nekoosa Edwards Paper Company. Toastmaster, L. E. Smith.

(7.) History of Nepco Lake Water Supply. By John E. Alexander, Manager, Nekoosa Edwards Paper Company.

(8.) Question Box on Mill Problems.

(9.) Value of Superintendents Association to the Industry. By F. J. Rooney, National President.

(10.) Speaker—The Hon. Fred R. Zimmerman, Governor of Wisconsin.

Sunday, September 24, Golf Tournament at Bull's Eye Country Club.

Members are especially invited to bring their golf clubs and play on the beautiful 18 hole golf course of the Bull's Eye Country Club, Sunday, as guests of Consolidated Water Power and Paper Company and Nekoosa Edwards Paper Company.

Special Ladies Golf Tournament.

Sunday noon dinner may be obtained at Club at $1.10 per plate by making reservations.

Description of Golf Course attached.

Special notice: This Fall Meeting of the News Print Bureau, Cost Accountants and Engineers and the Northwestern Division of the Superintendents Association should bring together the largest gathering of Paper Mill men in the history of the industry in Wisconsin.

Special care has been taken in preparing the program for both days so that it would be interesting to men in all phases of the industry. Make your plans to spend the full three days in the beautiful Wisconsin Valley.

We do not need to tell you about the fine mills and power plants at Biron, Wisconsin Rapids, Centralia, Port Edwards and Nekoosa. We believe they are the finest paper mills in the industry and are well worth your visiting.

Please help the local committee by sending in your registration at once.

News Print Production for August

Production of news print in Canada during August, 1927, amounted to 180,187 tons and shipments to 180,666 tons according to the News Print Service Bureau. Production in the United States was 127,129 tons and shipments 124,402 tons, making a total United States and Canadian news print production of 307,316 tons and shipments of 305,068 tons. During August, 19,152 tons of news print were made in Newfoundland and 1,337 tons in Mexico, so that the total North American production for the month amounted to 327,805 tons.

The Canadian mills produced 121,085 tons more in the first eight months of 1927 than in 1926, which was an increase of 10 per cent. The United States output was 102,293 tons or 9 per cent less than for the first eight months of 1926, that in Newfoundland 37,636 tons or 32 per cent more, and in Mexico, 1,442 tons or 18 per cent more, making a total North American increase of 57,870 tons or 2 per cent.

During August the Canadian mills operated at 81.6 per cent of rated capacity and the United States mills at 82.1 per cent. Stocks of news print paper at Canadian mills totalled 31,743 tons at the end of August and at United States mills 30.335 tons, making a combined total of 62,078 tons which was equivalent to 4.5 days' average production.

Fall Paper Trade Outlook Bright in Toronto

News Print and Pulp Business Expected to Show Material Improvement in Near Future — Summer Season, Just Concluded, Proved Below Usual Mark With Most Paper Mills— Premier of Ontario Announces Constructive Timber Policy

[FROM OUR REGULAR CORRESPONDENT]

TORONTO, Ont., September 19, 1927.—It is expected that business in the pulp and news print line will improve shortly so far as the market is concerned, now that the summer season is over and the outlook for fall trade is good. A bountiful crop has been reaped in all parts of Canada and this should have a reflex action on all lines of activity. In the pulp and paper trade, the summer season just concluded was not up to the mark with most mills. The demand for news print is lower than was anticipated and the call for sulphite pulp was indifferent. A summer slump in the requisitions for pulp and paper products is usual but this is later followed by a revival of activities during the autumn months. This year, due to spotty business conditions in the United States, the earnings of the news print companies will be below last year's level and unless there is a material betterment in the demand for sulphite pulp soon, the sulphite pulp producers will also perhaps show earnings a little lower than a year ago. At the moment there is some visible betterment in the markets.

New Timber Policy in Ontario

The Hon. G. Howard Ferguson, Premier of Ontario, made an important announcement recently at North Bay, regarding the timber policy of the Ontario Government. He asserted that on all Government construction work, whether for public buildings, hydro-electric or any other purpose, the contracts would be let on the distinct understanding that the timber must be produced in the Province of Ontario. The history of the forest products industry in the Province was reviewed by the Premier, who especially mentioned the waste which occurred in the early days. Following this, he said, real efforts had been made to stabilize the pulp and paper industry in order to make it one of the permanent activities of the Dominion. In order to carry this out the Ontario administration was disposing to operators only limits to the extent that they could use. Provision had also been made whereby the Government would look after the growth of the new timber. It was this system which had made the pulp and paper industry what it was today and it was this development to which the Premier gave credit for bringing the Canadian dollar back to par.

Pulp Activities of the North

Speaking at the banquet tendered the Northern Crusaders, which was held recently in Toronto, Alexander Dewar, of the Abitibi Power and Paper Company, Iroquois Falls, who was in charge of the invading army of northern settlers, stated that the forests of the northern part of the Province were the greatest industry and would remain so until agriculture had taken its place. The limits in Northern Ontario provide a good living for some 15,000 people in the mills and double that number in the bush so that close to 200,000 were directly dependent on the woods for their livelihood. The Abitibi company had paid out to settlers an average of $1,000,000 a year for the past twelve years for pulp wood.

Today there was in the north of the Province a forest area of 245,000 square miles and of this at the present moment only about 160,000 square miles is accessible or about 102,400,000 acres. This area contains 200,000,000 cords of pulp wood and 35,000,000,000 board feet of other timber.

The average revenue derived by the Province for the last five years is $3,800,000 annually from those parts of the forest area now being used. The forests, however, were not unlimited. The mills of Ontario use 1,294,922 cords annually, which means that 323,730 acres are cut over each year. To make it more concrete one mill in Northern Ontario cleared a 160-acre farm in two days. The cutting of timber was quite proper as the forests were of no use and gave no revenue unless they were cut down. Fire and insect pests each destroy yearly as much as is cut or, in other words, the people got only 33 per cent of the wood which disappears each year.

Toronto Warehouse Greatly Extends

United Paper Mills, Toronto, who have offices and warehouse in the Spadina Building, have greatly extended their premises by taking in additional room so that another flat is practically occupied. There have been several changes in the arrangement of the private offices, and much better facilities are now presented for handling stock, display purposs, etc. C. W. Paul, late of Hamilton, the new sales manager of the company, is now installed in his new position and reports that the outlook for fall business is bright. The recent hot weather and Fall Fair excitement interfered with trade to a certain extent during the past few days but it is expected from this that the movement in autumn buying will be steadier and the volume more satisfactory.

Publishers Visit Ontario Mills

E. W. Backus, W. T. Backus, and Seymour Brooks, were hosts to 125 United States publishers and railway men who recently paid a visit to Kenora, Ont. The party also visited International Falls, Fort Frances and Fort William. The visitors were particularly impressed with the projects at the head of the lakes, where one of the largest paper mills in the world is now under construction. In all the places they visited a splendid reception was tendered them, luncheons and trips making their outing very pleasant.

In Kenora, Donald McLeod, resident vice-president and general manager of the Kenora Paper Mills, Ltd., extended a local welcome to the touring publishers. The latter inspected the power plants and also the Kenora paper mills, where the two machines holding the world's record for news print production, are in operation. The visitors were particularly impressed with the efficiency of the staff and the modern arrangements of the mill which are generally conceded as being unsurpassed in any other plant throughout the American continent. The members of the party enjoyed fishing during part of the time and musical entertainments in the evenings and a special feature one night was the barbecue with buffalo meat done to perfection on the spits.

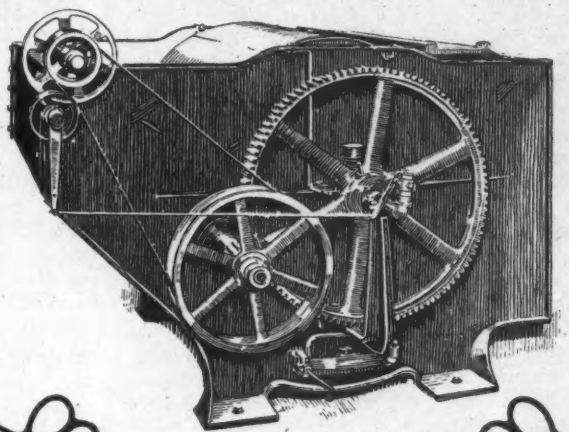
Safety Work Conference Held

An important safety conference was held recently in Fort William, Ont., by the western group of the Ontario Pulp and Paper Makers' Safety Association. There was a large attendance of representatives from all the plants. Among those who delivered addresses during the conference were Alexander White, Chief Sanitary Inspector for Ontario, William C. Millar, Provincial Sanitary Inspector, Fort William, A. P. Costigane, secretary-manager of the Ontario Pulp and Paper Makers' Safety Association, Toronto, and others. The visitors were given a civic welcome by Mayor Crawford, who spoke of the great importance of the pulp and paper industry and expressed his admiration of the spirit which prompted those engaged in directing the calling to gather together to study methods of protection of the lives and limbs of men employed in the mills and camps. There were separate meetings held by the Woods Section and the Papermakers' Section, at which modern sanitation and accident prevention were thoroughly discussed.

(Continued on page 44)

What you want

The BIRD SAVE-ALL



You want to get the fibre out of the white water, put it back in the system and do the whole job with as little fussing as possible in a way that makes you a profit.

The Bird Save-All does exactly what you want.

Let us show you how and why.

BIRD MACHINERY

BIRD MACHINE COMPANY

South Walpole - Massachusetts

1162

Paper Business More Active in Los Angeles

With Return of Executives From Vacations, Trading in Local Paper Market Becomes Brisker —Prices of the Various Grades Remain Practically Unchanged — Twine Quotations Higher, Due to Shortage in Cotton Crop

[FROM OUR REGULAR CORRESPONDENT]

LOS ANGELES, Cal., September 16, 1927.—With the return to their various posts of paper trade executives, the industry has started September off with considerable activity. Paper prices have made little change. The price of cotton twine has soared very high, due to the shortage in the cotton crop this year. Most of the local paper companies report business as being very good, and this fact is corroborated by Secretary Coffman, of the Paper Trade Association of this city, who states that the paper industry has held up remarkably well this summer, with September already showing signs of increased activity in all paper mills during the fall months. It might be said for this association that it is one of the most active of its kind in Los Angeles, and the worthy secretary devotes all his time to organization work and providing ways and means of stimulating interest among the association's many members.

Mr. Coffman announces that the Paper Trade Association's golf tournament is drawing to a close, with the last game of the tournament being played some time next week. At the termination of the tournament, four special prizes will be presented the winners, and the secretary states that unusual interest has been displayed in the various games, providing recreation for many hard-working executives who otherwise, possibly, would not take the time to engage in competition. The regular meetings of the association also prove a source of inspiration to the paper trade members, for in this way they have an opportunity to compare notes, so to speak, and ascertain just what other members of the paper trade fraternity are doing.

G. I. Tompkins Back from Canada

George I. Tompkins, general manager of the Sierra Paper Company, has just returned from a three week's vacation in Vancouver, British Columbia, and other parts of Canada. According to Secretary Coffman, Mr. Tompkins, in addition to visiting some of the most scenic spots of Canada, engaged in some of the highest grade of golf ever played in that country. At least he had the distinction of playing on the same course as the Prince of Wales during the time this very democratic Prince was engaged in the well-known sport. "High grade" applies equally well to the paper trade Mr. Tompkins conducts, as well as the brand of golf he plays, for the Sierra Paper Company is experiencing a very fine fall business in the better grades of paper.

F. M. Couch to Tour Eastern States

F. M. Couch, general manager of the Blake, Moffitt & Towne Paper Company, will leave September 12 for a trip through the eastern states. Accompanied by his wife, Mr. Couch will visit Boston, New York, Washington, D. C., and other eastern cities, returning by way of New Orleans and the southern states. One of the hardest working executives in the Los Angeles paper industry, Mr. Couch is quite deserving of this extended vacation, and he hopes to acquire new ideas and suggestions from the various paper industries in the eastern cities which he will visit.

Baruh Plans Foreign Trip

In the early part of October, J. Y. Baruh, manager of the Zellerbach Paper Company, of Los Angeles, will leave for a three or four months' tour, accompanied by his wife. They will visit the Holy Lands, Spain, France, and other foreign countries. Their itinerary, in fact, calls for visits to nearly every spot of interest in the eastern hemisphere, which accounts for the indefinite length of his vacation. In the absence of Mr. Baruh, the local office will be in charge of Victor E. Hecht, assistant manager, who has just returned from his vacation. The Zellerbach Paper Company is doing a splendid business, and Mr. Baruh can well feel that the organization will function smoothly during his absence, with some of the most capable executives in charge of various departments of the concern.

Isadore Zellerbach Again Honored

Word has just been received that Isadore Zellerbach, of San Francisco, owner of the Zellerbach Paper Company, has been reappointed as a member of the reorganized State Fish and Game Commission, by Governor Young. One of the most successful executives in the paper trade industry, Mr. Zellerbach will serve with G. B. Clarkson of Los Angeles, and Reginald Fernald, Santa Barbara publisher. Mr. Zellerbach's original appointment was made by former Governor Richardson, and his recent reappointment was due to his splendid past record on the commission.

A splendid tribute was paid Mr. Zellerbach by Governor Young in the following announcement: "I have this day appointed George B. Clarkson, of Los Angeles, Reginald Fernald, of Santa Barbara, and Isadore Zellerbach, of San Francisco. Mr. Clarkson and Mr. Fernald are new members, but Mr. Zelelrbach was a member of the former commission, and is named in deference to an almost universal regard of sportsmen all over California, who have been impressed with the faithful and important work he already has done toward preserving our fish and game."

Ingram Organization Expands

Increased business is responsible for the announcement made recently by Ingram & Co., local paper house, located at 1112 Santa Fe Avenue, that the organization will shortly erect a new $100,000 storage building at 1504 Rio Vista Avenue. This new structure, 150 by 162 feet in dimension, will be of the most modern construction and design throughout, with special arrangements made for lighting and ventilation. This is one of the few companies that has successfully negotiated the dull summer months without a cessation of their business activities. According to President Donald Ingram, of the paper concern, their business is growing steadily, and this new storage plant has become an absolute necessity to take care of the large output.

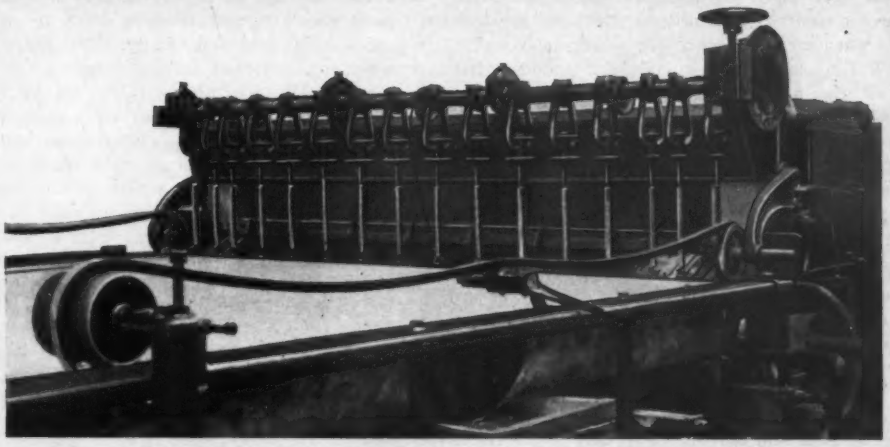
B. Hopper Wins State Championship

DETROIT, September 19, 1927.—Shooting a brilliant 76 on Friday's final day of play, Bertrand Hopper of Kalamazoo regained the state championship, Friday, with 36-hole total of 157. Hopper was three strokes under the field and won the title for the second time, having been champion in the 1925 tournament at Lansing. Dr. R. E. Balch, Kalamazoo, was tied for fourth low gross honors and won a Class A gross prize while C. S. Campbell was low gross prize winner in Class C. The tournament was for players more than 50 years of age and the association membership includes professional and big business men.

Paper Stock Warehouse Damaged

APPLETON, Wis., September 17, 1927.—Considerable damage was done this week to a wooden warehouse of M. Burnstein Company, Neenah, Wis., paper and rag stock dealers. The lower floor collapsed under the weight of large quantities of storage, and the walls also caved in. The building rested on wooden posts.

For More Production



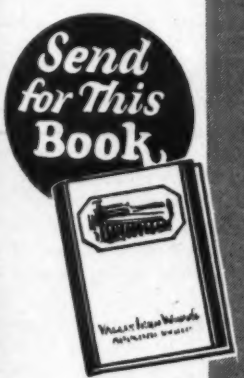
Speed Up Your Paper Machines and Produce Better Paper at Less Cost

Present day quantity production demands faster paper machines—more production—and at the same time quality must be maintained. The Voith Stock Inlet is the method that secures more production without sacrificing quality. It not only increases production 10% to 15%, depending on drying capacity and your auxiliary equipment, but improves the paper and lowers its production cost.

With the Voith Inlet practically every grade of paper can be made—and improved—light weight, thin or heavy paper. Over two hundred Voith Inlets in use throughout the country—many of them the second, third and fourth installed after the first one proved conclusively that the Voith Inlet is right. It is preferred because it performs.

Easy to operate, the Voith Inlet actually pays for itself out of the profit it earns. It will go on producing long after its first cost has been written off the books. Why not invest in this type of equipment?

The Voith Inlet can be installed on the Straight Fourdrinier, Harper or Yankee machine. A letter will bring you complete details. Send for our special booklet today.



VALLEY IRON WORKS CO.

Machinery for Paper and Pulp Mills

APPLETON WISCONSIN

New York Office: 350 Madison Avenue

Western Mfg. & Sales Div., Smith & Valley I. W. Co., Portland, Oregon.

Development in New Paper-Making Materials

By Robert M. Boehm [1]

Everyone closely connected with the paper industry is more or less interested in the development of new papermaking materials. This has always been considered as a necessary alternative which must be resorted to when the recession of our wood supply makes it necessary to look for new sources of supply, but seldom has it been considered as being a source of supply which will compete under present conditions with wood pulp, in respect to yield, strength, quality and cost. It has always been regarded to some extent as an evil which some day may become necessary, but which should be avoided so long as possible.

What Causes This Attitude

This attitude, without doubt, is caused by the fact that ordinary cooking methods, and the time-worn experiments of early chemists, show a yield of 15 to 20 per cent for such raw materials as bamboo, cotton stalks, palmetto, bagasse, banana trees and such tropical or semi-tropical plants. Furthermore, they show a high chemical consumption and, at the end, a decidedly inferior grade of pulp, not to be compared in any respect with sulphite or kraft. It has remained for a layman to develop an entirely new method of attack for these materials, a German chemist, who, although an outsider in the paper game, is a cellulose technician of many years standing. Looking at the problem of these papermaking materials from an outsider's point of view, he noted a new method of approach which those of us in the industry had not foreseen. It was merely an example of our being so close to the problem and so engrossed with the history of the experiments on these materials that we overlooked this method of attack.

Any Fibrous Material Can Be Pulped

With the plan of attack clearly in view, years have been spent in experimenting and in developing these processes to the point where any fibrous material could be successfully pulped. The American Pulp Corporation was formed to carry on these experiments and to work them out on a commercial basis. An experimental mill was established where complete runs were made with commercial sized equipment, to demonstrate the feasibility of these processes, and their application to commercial practice. The results obtained showed conclusively the far-reaching possibilities for the commercial use of these materials.

The pulp made by these processes will compete with wood pulp under present market conditions, yielding a pulp which compares favorably with sulphite in firmness and formation, and which exceeds it in strength and pliability. The yield is high and the cost of raw materials and cost of production are, of course, very much lower than sulphite.

Special Attention To Bamboo, Bagasse, etc.

The materials given special attention were bamboo, bagasse, banana, cotton stalks, palmetto, rice straw, and wheat straw. Eucalyptus was also pulped by an analagous method. Wheat straw, of course, is used as a papermaking material today, but only to produce boards and similar sheets. Some of the above materials produce, by these new processes, a pulp suitable for the finest tissues and writings, others are suitable for the production of high-grade wrappings and catalogue papers. The American Pulp Corporation is now engaged in reasearch to determine the value of the stock, notably that from bamboo and cotton stalks, for the manufacture of alpha-cellulose and artificial silk.

The treatment of the raw materials is in every way far less rigorous than by any present methods. In commercial practice the cooking is done in a closed vessel under a slight pressure, but never high enough, nor is the chemical action ever severe enough, to cause the destructive breaking-down of the cells with the resultant loss in yield and quality. The fibers produced by these processes, when viewed under the microscope, show a surprising development. Instead of the fairly straight, unit fiber of wood pulp, or the broken-down fiber of commercial strawboard, the fibers look like a million hands, all clasping and interlocking. Each bundle of fibers carries innumerable tendrils, which are curved and which when formed on a wire, give a very strong and dense sheet, in some instances surpassing kraft in strength. Another surprising feature of these processes, is that the knots, joints, seeds and pith do not have to be removed, but can be handled with the rest of the material without any cutting or grading. This has always been a great handicap in the utilization of these materials, as the grading out of the knots and so forth, practically placed them out of the realm of commercial feasibility. The writer was engaged in the development of a process for pulping straw several years ago, under the guidance of a very able chemist, but although various approaches were tried, it was always found that the knots remained insoluble and it became necessary to cut these down and themselves form a very clean and high-grade pulp.

Research Upon Spent Liquor

The company is now engaged in further research upon the spent liquor. Although it is perfectly feasible to recover the chemicals, it now appears that they are of far more value as a commercial fertilizer. Tests have been made on various plants treated with this liquor, showing an increase of 30 per cent in quantity and quality over similar plants not so treated. and these results would indicate an enormous increase in crop if applied to acreage production. This liquor, when sprayed on the plants, seems to effectually protect them from insect pests or borers.

Further work is now being carried on and exceedingly interesting results are indicated in line with the conservation of natural resources and the utilization of materials which are now classified as wastes.

[1] American Pulp Corporation, 360 North Michigan Avenue, Chicago, Ill.

Import Paper Cases

The United States Customs Court resumed its sessions after the summer recess on September 13, and a check of the number of cases pending involving paper shows a total of 2,095, including both cases in which paper has been held by appraisers to be misclassified or undervalued. On the basis of decisions handed down during the summer many of these cases will doubtless be abandoned by the importers, the basic issue involved having been ruled upon. Some thirty such importations are to be so abandoned in the next few weeks. These figures were compiled by the Import Committee of the American Paper Industry in preparing its program of work for the next year. Receiving the decisions handed down since the Committee was formed it is found that over 500 decisions have been made involving an increase in duties on imported paper. Over 200 cases have been tried in the Customs Court, and are not yet decided.

P. S. Hanway To Attend Waxed Paper Meeting

In line with the assistance which the American Paper and Pulp Association is constantly giving its affiliated associations, Paul S. Hanway, statistician of the association, will attend a meeting of the American Waxed Paper Association, to be held at the Stevens Hotel in Chicago, Ill., on September 28, to act as secretary of the meeting.

MORE HISTORY!

"Simple facts not foolish statements."

CHAPTER VII.

Dilts NEW TYPE Beaters on kraft.

Here is a mill formerly making 10 tons of wrapping and specialties, now with capacity for 25 tons No. 1 Kraft. Read this report:

"These beaters now making No. 1 Kraft consist of the new 62 x 48 Dilts New Type beater, the 3 old 62 x 48 beaters rebuilt by Dilts to their New Type, and the new Dilts continuous beater handling the pulp. Two beaters are on each 125 HP motor, the power indicator showing about 50 HP per beater.

"On the old beaters before rebuilding much difficulty was experienced in making test kraft, the sheet running about 80% test, but on the present beaters the Mullen shows 100% test or 'a point to the pound,' and the character of the sheet is very satisfactory throughout.

"The mill is absolutely changed from a wrapping grade plant to a No. 1 Kraft grade by this Dilts beater equipment."

Does this interest you? Are you making cheap papers instead of high grades because your beaters are not equal to the requirements? Why not let us improve your prospects?

"Your paper is made in your beaters."

Dilts

MACHINE WORKS, Inc. FULTON, N.Y.

EXPORT OFFICE ~15 PARK ROW~ NEW YORK CITY.

CONSTRUCTION NEWS

A Summary of Vital Facts Regarding Construction, Finances and Operation of Paper Mills

Construction News

Los Angeles, Cal.—The Ingram Paper Company, 1112 Santa Fe avenue, has asked bids on general contract for a new one-story and basement building at 1504 Rio Vista avenue. It will be 150x162 feet, and has been designed primarily for storage and distributing service. It is estimated to cost in excess of $100,000, with equipment. John M. Cooper, River-Strong Building, Los Angeles, is architect.

Milford, N. J.—The Warren Manufacturing Company has taken title to property adjoining its local plant, to be used in connection with an expansion program now under way, reported to cost in excess of $300,000, with equipment. The work will include a group of new two-story buildings, including finishing room, 71x145 feet; machine department, 81x230 feet; and office building, 30x70 feet. A train shed, 25x180 feet, will also be built, designed for receiving and shipping service. Contract for the different structures has recently been let to H. K. Ferguson Company, Hanna Building, Cleveland, Ohio. Headquarters of the company are at 342 Madison avenue, New York.

Aberdeen, Wash.—The West Lumber and Pulp Company has been chartered under Delaware laws with capital of $2,500,000 and 100,000 shares of stock, no par value, to construct and operate a proposed local sulphite pulp mill, on site selected in the Junction City district. B. T. McBain, Oregonian Building, Portland, Ore., paper and pulp expert, will be active in the new company; plans will be drawn at an early date under his direction for the initial unit, reported to cost more than $1,000,000, with machinery, and ground will be broken, it is said, within the next 60 days. W. E. Johnson, Montesano, Wash., is also interested in the new organization.

Baltimore, Md.—The American Bank Stationery Company, manufacturer of writing papers, bond stocks, etc., has begun the erection of a new addition to its plant at Aisquith and Curtain streets, to be 75x90 feet, reported to cost in excess of $25,000, with equipment. It will be used for increased capacity. A general contract has been let to De Coup & Chidlaw, Eutaw and Biddle streets, Baltimore, and miscellaneous contracts have been awarded for finishing, including steel sash to the David Lupton Sons Company, Allegheny avenue, Philadelphia, Pa.

Tulsa, Okla.—The Southwest Box Company, recently formed with a capital of $200,000, to manufacture fiber boxes and containers, has acquired property on the Sand Springs Road, and plans the early erection of a new plant, for which building plans will be drawn by the Truscon Steel Company, Youngstown, Ohio. The initial unit will be one-story, 90x480 fet, and is reported to cost in excess of $100,000, with machinery. Facilities will be provided for large capacity. J. O. Hoerner, Keokuk, Iowa, will be president of the new company, and active in the management; C. M. Rich, last noted city, will be chairman of the board of directors; R. H. Hoerner, Tulsa, is vice-president.

Brooklyn, N. Y.—The Standard Paper Bag Company has leased space in the Bush Terminal building at South Brooklyn, and will establish a plant at that location.

Carthage, Ind.—Fire, September 6, destroyed a portion of the plant and stock at the works of the Dixon Board Mills, Inc., with total loss reported at $35,000. It is understood that the bulk of the loss was in raw material, including straw used for straw-board production.

Astoria, Ore.—The Rainier Pulp and Paper Company, Seattle, Wash., an interest of the Zellerbach Paper Company, Sacramento and San Francisco, Cal., has taken bids on structural steel framing for a new local pulp mill, reported to cost in excess of $500,000, with equipment. It is purposed to award a contract for the building at an early date.

Rothschild, Wis.—The Marathon Paper Mills Company has arranged for a bond issue of $4,000,000, a portion of the fund to be used for expansion, including the acquisition of the Menasha Printing & Carton Company, Menasha, Wis., and the Lake Superior Paper Company, Ashland, Wis. An extension and improvement program is now in progress at the plant of the Menasha company, to provide for increased output. The company will also handle certain financing in connection with the new bond issue.

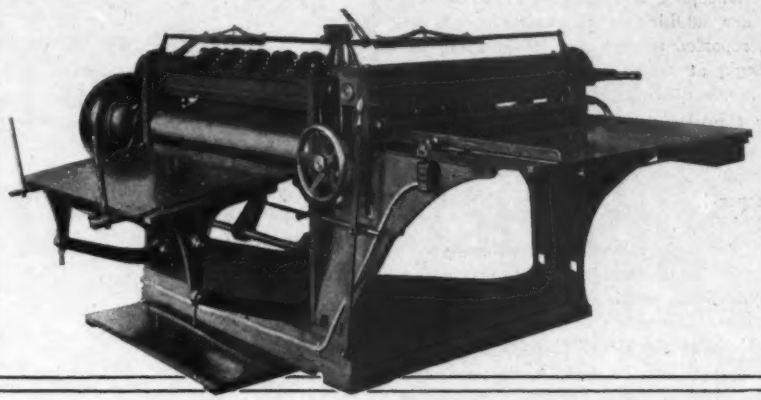
Tacoma, Wash.—The Union Bag & Paper Corporation, Woolworth Building, New York, has arranged for the organization of a subsidiary under the name of the Union Bag & Paper Power Corporation, to purchase hydroelectric and steam power properties in the vicinity of Hudson, N. Y., where an existing mill of the parent company is located, and to make developments in such properties for increased capacity for mill service. The new concern will also take title to waterfront property at Tacoma, Wash., where, in cooperation with the St. Paul & Tacoma Lumber Company, Tacoma, the parent organization proposes to construct and operate a large pulp and paper mill primarily for the production of kraft papers. The last noted project is reported to cost approximately $2,000,000. The subsidiary interest is arranging for a bond issue of $3,000,000, a considerable portion of the proceeds to be used for the purchase of properties noted. Everett G. Griggs, president of the St. Paul & Tacoma Lumber Company, will be active in the mill project in that section.

Baltimore, Md.—The Commercial Envelope Company, Candler Building, has concluded arrangements for a lease of space in the building of the Bes Cone Company, Railroad avenue, near Union avenue, and will use for expansion. Alterations will be made. It is purposed to occupy the premises early in January.

Sacramento, Cal.—The Zellerbach Paper Company is said to have sustained a loss of more than $50,000, in a recent fire at its plant, and plans are under way for early rebuilding, with reconstruction expected to cost close to a like sum.

Portland, Ore.—The Hawley Pulp and Paper Company, Oregon City, Ore., has filed plans for its proposed new factory branch and distributing plant on East Main street, reported to cost approximately $75,000, with equipment. A general contract was recently let to Arthur & Sons, Worcester Building, Portland.

New Brunswick, N. J.—J. Lapalosa, 177 Remsen avenue, New Brunswick, and associates have engaged H. G. Bach, 63 Shureman avenue, New Brunswick, architect, to prepare plans for a new local paper goods factory. It will be two-story, reported to cost in excess of $45,000, with equipment. Work is expected to begin at an early date.



Better Bearings Make Better Boxes

SMOOTHER running rolls, in permanent alignment, never requiring adjustment, for there is no measurable bearing wear in New Departures.

Quieter gears always in correct contact because they are rigidly supported by New Departures.

Longer lived cutters because friction is absent in New Departures.

No spoilage of stock because of lubrication leakage—New Departures are sealed to prevent this.

No waste of productive machine time, for New Departure-equipped machines operate continuously with minimum maintenance expense.

These advantages are obtained by the makers of the Hobbs Box Scoring Machine shown here, because these machines are equipped with New Departure Ball Bearings.

Write for engineering bulletins showing proven practice in "Ball Bearing Application to Paper Machinery." The New Departure Manufacturing Company, Bristol, Connecticut; Detroit, Chicago.

New Departure
Quality
Ball Bearings

695

Windsor, Ont.—The United States Playing Card Company, Windsor, with headquarters at Cincinnati, Ohio, has awarded a general contract to S. E. Dinsmore & Company, Park Building, Windsor, for a proposed new addition to its local plant. It will be one-story, 90x420 feet, reported to cost close to $175,000, with equipment. Work will begin at an early date. Pennington & Boyde, Bartlett Building, Windsor, are architects.

New Companies, Etc.

Kirkwood, N. J.—The Kirkwood Paper Box Company has been incorporated with a capital of $5,000, to operate a local plant for the manufacture of paper boxes and containers. The incorporators are Charles P. Phillips, W. H. Richmond and John C. Groves, Kirkwood. The last noted represents the company.

New York, N. Y.—The E. & R. Paper Box Manufacturing Company has been chartered with a nominal capital of $5,000, to manufacture and deal in paper boxes, cartons, etc. The incorporators are A. Matthew Millman, Archie Williams and William Tancer, 38 Park Row, New York. The last noted is representative.

New York, N. Y.—The Nashua Card, Gummed & Coated Paper Company, a Massachusetts corporation, has filed notice of organization to operate in New York with capital of $250,000.

10,000 Shares of Mead Pulp Stock Offered

[FROM OUR REGULAR CORRESPONDENT]

DAYTON, Ohio, September 17, 1927.—Offer for sale of 10,000 shares of the common stock of the Mead Pulp and Paper Company, with home offices in Dayton and factories in this city, Chillicothe, Ohio, and Kingsport, Tenn., was announced last week. The issue, involving transactions totaling $600,000, has been underwritten by the N. S. Talbott Company, of Dayton, and J. R. Edwards & Co. of Cincinnati.

The sale, which is the first of stock ever made by the concern, will be at a price of $60 a share and application has been made for listing the stock on the Cincinnati Stock Exchange.

In announcing the issue the underwriters said that it already had been almost wholly subscribed and that the offer and advertisement which will accompany it will amount to no more than attending to the formality of making the transaction one of record.

The total assets of the company are approximately $15,500,000, with net earnings for the first six months of the current year of $611,117 and gross sales of $5,499,652 for the same period. The capital stock of the concern is $300,000.

George H. Mead of Dayton is president of the company, which dates back to 1846 and has been continuously in the hands of the Mead family, now the third generation. The company was incorporated under the laws of Ohio in 1905 with its present name and has enjoyed a steady growth.

The Chillicothe plant is modern in every respect with six paper-making machines in operation. In 1925 the company acquired the plant of the Peerless Paper Company, a modern two-machine paper mill, in Dayton. Recently, through stock control, the company also has acquired the Mead Fibre Company, at Kingsport which operates a modern soda pulp mill and a two-machine paper mill with one machine now installed.

In the published announcement which accompanies the offer it is set out that the funds derived from the sale of the 10,000 shares of no par value common stock will be used to pay for improvements made at plants since 1919 and subsidiaries of the company, to liquidate indebtedness and for working capital and other corporate purposes.

Other officers of the company besides George H. Mead are R. T. Houk, H. E. Talbott, Jr., and N. S. Talbott, vice presidents; Robert E. Cowden, secretary; Speed Warren, treasurer, and H. P. Carruth, general manager. The directors are H. P. Carruth, E. A. Deeds, R. H. Houk, C. F. Kettering, George H. Mead, John A. Poland, N. W. Strobridge, H. E. Talbott, Jr., and N. S. Talbott. With the exception of Messrs. Carruth and Poland, who reside in Chillicothe, and Mr. Strobridge, who resides in Cincinnati, the members of the board are residents of Dayton.

"The Nigger in the Wood Pile"

No doubt every reader can remember back to the days when the apparently bottomless wood box greatly interfered with a trip to the "old swimmin' 'ole" or a game of "one old cat."

A newly published booklet, "The Nigger in the Wood Pile," issued by the American Hoist and Derrick Company, recalls the olden days and describes how some conceived the Nigger in the Wood Pile to be a muscular and beneficent genie who would come at a mumbled formula and fill that ever yawning wood box.

The American Hoist and Derrick Company has pointed out the similarity between this genie of the wood pile and their "American" Locomotive Crane that is used by so many paper and pulp companies to pile economically and rehandle millions of cords of pulpwood a year.

The booklet reviews such worthy features as low upkeep, no teetering, value as a switch engine, visibility and quiet operation, simultaneous performance of all motions, smooth power application and accuracy in placing the load.

A copy of this booklet, "The Nigger in the Wood Pile," will be sent upon application to the American Hoist and Derrick Company, 63 South Robert street, St. Paul, Minn.

American Reinforced Paper Co. To Build

ATTLEBORO, Mass., September 19, 1927.—The plans of the American Reinforced Paper Company of Attleboro for construction of a complete new plant are being worked out rapidly and work will be started soon on land adjoining the railroad near Starkey avenue in Attleboro. An agreement has been reached with the New England Railroad officials for construction of a spur track which will connect the new building with the main line. Deeds for part of the land have been signed and in a short time a contract will be made for the construction of the building, costing more than $100,000.

The big paper machine, which will turn out a greatly increased production, will be ready for setting up as soon as the building is completed. The giant structure, with many improvements over that now in use, has a much greater capacity. It probably will be several months before the new plant is ready for occupancy and in the meantime orders for reinforced paper are coming in so rapidly that it is with difficulty that they can be filled. The product is being sent to all parts of the United States.

Paper Pulp Mill Deal Called Off

It was officially announced from headquarters of C. M. Thorsen that the paper pulp mill deal on Port Wentworth site has been definitely canceled after negotiations of several months. Announcement was made that all plans for the proposed development in Savannah were unsuccessfully terminated because of the failure of stockholders of Thorsen's firm and financial backers of development to come to any agreement. It was stated that no negotiations for another site are at present under way.

New Safety Record for Niagara Mill

[FROM OUR REGULAR CORRESPONDENT]

APPLETON, Wis., September 17, 1927.—With completion of 173 consecutive days of operation without a lost time accident, the Kimberly-Clark Company's mill at Niagara, Wis., set a new safety record for itself. The best previous run was 172 days. The mill employs 650 men. An effort will be made to keep up the record long enough to surpass the record of the company's mill at Niagara Falls, N. Y. The latter has operated 209 consecutive days without a lost time accident.

And Now Install a Hardinge

Because the Hardinge Rod Mill is the most efficient. It's the greatest time and money-saver in the paper industry today. Days of Experimenting are over. The "Hardinge" has proven its merits in the production of fine stock.

The Hardinge Rod Mill will produce finer stock in less time and with less power consumption. WHY? Here is the reason. It is the only mill constructed with conical ends—they eliminate wear and breakdown—the economy of production. No friction against the ends. The rods are always in alignment. Pulp level at any desired level without rod wear. Extra large trunnions to provide easy removal and replacements. No cutting action from the rolling of the heavy rods. This means greater hydration and better stock.

Write for particulars on the Hardinge Rod Mill

THE GRILEY-UNKLE ENGINEERING CO.
FORT WAYNE, INDIANA.

Obituary

Joseph P. Friend

BOSTON, Mass., September 19, 1927.—The funeral of Joseph P. Friend, charter member of the National Boxmakers Association and founder of the Friend Box Company, Salem, Mass., was held Tuesday, September 13, at his residence, 1 Moffatt Road, in that city. Mr. Friend died Sunday, September 11, after a short sickness following the return from his summer estate at North Windham, Me. The bearers were Lester D. Friend and Edgar R. Friend, sons; Frank B. Friend, of Sales, and Clarence E. Friend of Beverly, Mass., brothers; F. L. Ordway of Danvers, Mass., and C. F. Kelley of Salem.

Mr. Friend was born August 26, 1857, in Middletown, Mass., the son of the late Luke E., and Frances P. Friend. When a young man he became identified with the box and paper industry in an executive capacity, in Boston and Salem. The Friend Box Company, one of the leading concerns in Salem, which he founded more than twenty years ago, manufactures game boxes. The factory was cloesd during the funeral services.

Mr. friend was a member of the Salem Chamber of Commerce and founder and formerly president of the Pickman Park Neighborhood Association. Besides his wife and two sons a 12-years-old daughter, Elsie Friend; two brothers, Frank B., of Salem, and Clarence H., of Beverly; two sisters, Mrs. Elisha M. Bevins and Miss Fannie E. Friend of Salem are living.

Henry R. Wickenden

MONTREAL, Que., September 17, 1927.—Henry Robert Wickenden, 35 years of age, works manager of the Anticosti Corporation, died in Montreal during the week from complications following an operation.

In 1916 he received the degree of Bachelor of Science from McGill University in Civil Engineering, and was sent by the Wayagamack Pulp and Paper Corporation in interests of scientific forestry to Sweden, where at the University of Stockholm he conducted his investigations during the war. On his return he assumed his position with the corporation.

About a year and half ago, on the formation of the Anticosti Corporation, he accepted the position of works manager and held it up to his death, residing on the island.

Marshall C. Warwick

Marshall C. Warwick, secretary of the American Waxed Paper Association, and the National Association of Gummed Tape Manufacturers, died at St. Lukes Hospital, New York, on Monday, September 12. Mr. Warwick was a native of Michigan and a graduate of Kalamazoo College, Kalamazoo, Mich. He became secretary of the Waxed and Gummed associations late in 1926, after having served for several years as secretary of organizations of employing printers, in Syracuse, Erie and Youngstown, Ohio. He made a fine record with the associations and his passing is a serious loss to the groups which he was serving.

Uniform Business Indexes

The Weekly Business Review of the American Paper and Pulp Association issued on September 14 carried an article which should prove of interest to business executives everywhere.

The article is reprinted because of the tremendous importance of the suggestion which it contains. It would seem that an accurate and timely composite index of business could and should be developed.

While it is true that the leading economists of the country have been laboring for years to secure occurate reports and indexes, it is generally admitted that the subject still contains considerable room for enlargement and improvement.

The article which follows is self explanatory:

"It is understood that the Department of Commerce has for several years been checking the records of various leading business indexes. It has been found from this study that few if any of these indexes are reliable as indicators of actual conditions. Many of them were not sufficiently comprehensive, lacking various vital elements of business. Some fail to give due consideration to changing economic conditions while others over-emphasize items of declining importance.

A further check of forecasts for business trends, commodities, money rates, speculative activity, etc., drawn from these indexes has shown a corresponding unreliability. The incompleteness and inaccuracies of these indexes make them only moderately reliable material for forecasts which are thus still more unreliable and even dangerous to business.

It is reported that the Department of Commerce is about to inaugurate a thorough study of the situation with a view to ascertaining the flaws in the present indexes, classifications, etc., and the practicability of a composite index of greater reliability and safety for the business of the country.

The idea is an excellent one. Perhaps no better service could be rendered by the Department than the development of such a periodic balance sheet of general business which business executives would find dependable in checking records and therefore of extreme value in making plans for future business.

Trade associations serving the industries of the country could be of tremendous help in the development of such an improved index and the resulting forecasts. Trade associations collect the most reliable and complete statistics available for the groups which they represent and their cooperation in improving the methods of collecting and reporting this data could be of exceeding value to business in general. This has been proven during the past six months in the paper industry as this Association has corrected many erroneous published statements concerning paper statistics.

If the Department of Commerce could thus secure uniform, periodic reports from each association and industry and determine proper weighting for the various elements of such reports there could be developed in all probability an index which would be a much safer guide for forecasting various phases of business conditions.

No agency has so accurate and complete data as the Department of Commerce. Its data in many cases are not available to the public in general and certainly, the Department has easier access to more information than many organizations now publishing business index figures. For this reason it would seem that the Department should be the natural source for the compilation of a composite business index figure.

A committee of experienced representatives of leading trade associations and members of the Department of Commerce might well meet to develop a tentative system of uniform reports which would simplify the problem and, in the process, bring to light many suggestions of real value for future use.

The American Paper and Pulp Association advocates this study of the situation and it believes that the larger trade associations in particular would gladly cooperate in making such an index possible."

Mr. Hanway's contention that a better index would mean better and safer forecasting of business seems sane enough. There is, and probably will continue to be, a dangerous element in prognosticating the future but that in no manner implies that such danger cannot be reduced to a minimum.

It is a subject worthy of a conference of men who recognize the importance of the ultimate in such indexes. Mr. Hanway has certain suggestions to offer relative to the subject. Others probably have their opinions and suggestions.

It might bring the subject into definite activity if the Department of Commerce could see its way clear to call such a conference with the object of determining plans and procedure to develop such an index for general business as has been suggested in this article.

So One Thought May Survive

IN a lifetime of painstaking, eye-tiring effort, the medieval monk made a few copies of some precious book whose ideas must be passed on to posterity. Hundreds of things that might now seem to be worth knowing were discarded into an unrecoverable oblivion because the book maker had to limit his copying to the few things he chose as most important.

Today our literature is multiplied, not a letter at a time, but by the carload. Most that is printed is of fleeting value—much indeed, valueless. But among the tons of printing there are passed on, to all who wish to know, the worth-while ideas of the human race, those ideas that may seem of passing moment today only to be judged important by the next generation.

The censorship imposed by lack of paper long held back literature, restricted its quantity, limited its universality. Generous amounts of paper have made possible the presses that imprison the ephemeral thought that some future generation may release for the broad benefit of mankind.

Hammermill Paper Company

Erie, Pennsylvania

Trade Marks Department

CONDUCTED BY NATIONAL TRADE-MARK CO., WASHINGTON, D. C.

The following are trade mark applications pertinent to the paper field pending in the United States Patent Office, which have been passed for publication and are in line for early registration unless opposition is filed promptly. For further information address National Trade Mark Company, Barrister Bldg., Washington, D. C., trade-mark specialists. As an additional service feature to its readers, PAPER TRADE JOURNAL gladly offers to them an advance search free of charge on any mark they may contemplate adopting or registering.

WATERFALLS—No. 231,962. Waterfalls Paper Mills, Mechanic Falls, Me., and New York City. For ledger, bond, writing cover, wedding, offset, and mimeograph papers.

BON TON—No. 247,079. Harry Gross, Philadelphia, Pa., For wall paper.

MELLO—No. 250,953. Albany Perforated Wrapping Paper Company, Albany, N. Y. For toilet paper.

FORT HOWARD—No. 251,330. Fort Howard Paper Company, Green Bay, Wis. For toilet paper, paper towels, paper napkins, paper doilies, paper tablecloths and tissue paper.

REBEL-LAND—No. 251,521. Robert F. Sycle, Richmond, Va. For paper bags.

TRANS FOUR—No. 251, 626. Neidich Process Company., Burlington, N. J. For carbon paper.

CECCO—No. 252,030. Centralia Envelope Company, Centralia, Ill. For mailing and correspondence envelopes.

SATONE—No. 252,031. Same as above.

SAFEWAY—No. 252,309. Northern Paper Mills, Green Bay, Wisconsin. For folded paper towels.

VI-DEX—No. 252,433. Irving-Pitt Manufacturing Company, Kansas City, Mo. For loose-leaf ring binders and post binders.

ANTLERS—No. 252,751. The Wrenn Paper Company, Middletown, Ohio. For blotting paper.

CUT-RITE, No. 251,377. Automatic Paper Machinery Company, Inc., Newark, N. J. For waxed paper.

PURPLE CROSS, No. 253,124. Hilad Weistock, Baltimore, Md. For toilet paper and wax paper.

FLORENTINE, No. 247,796. Japan Paper Company, New York City. For Italian hand-made printing paper.

STANDARD, No. 250,698. Keuffel & Esser Company, Hoboken, N. J. For profile and cross-section paper.

LION, No. 250,810. Lion Systems, Inc., Chicago, Ill. For loose-leaf binders.

BRIGHT OUTLOOK IN TORONTO

(*Continued from page 52*)

G. R. Lane has been appointed superintendent of the Provincial Forestry Station at Midhurst, Ont., succeeding I. C. Marritt. Mr. Lane is the only son of the late George Lane, who was the first superintendent of the Provincial Forestry Station at St. Williams, in Norfolk County. The Provincial Forestry Station at Midhurst comprises 1,000 acres, much of which is young woodlands.

W. H. Kilby, chief of Forest Protection, Canadian National Railways, Montreal, was in Toronto last week on business.

Newaygo Timber Company, Ltd., Port Arthur, Ont., was lately incorporated with a capital stock of $100,000, to hold title to lands and timber in Ontario, and to cut, sell and deal in timber and timber products. Among the incorporators are G. W. Mead, E. B. Redford and S. W. Mead, all of Wisconsin Rapids, Wis.

A. E. Rudd, who many years ago in Toronto established the Rudd Paper Box Company, along with his wife, has been spending the past few months at various points in Ontario. He is returning in the near future to Los Angeles, Cal., where he now has his home.

C. I. Hill, of the Warren Manufacturing Company, New York, was in Toronto recently, calling on the trade.

T. J. Allen, of Paper Sales, Ltd., Toronto, has returned after spending his holidays at Burley Falls, Ont.

H. B. Donovan, sales manager of the Canada Paper Company, Toronto, who was confined to his home in Oakville for a few days by illness, is able to be around again.

J. G. Gibson, secretary of the Spanish River Pulp and Paper Mills, Sault Ste. Marie, Ont., who along with his family has been spending the past summer at Toronto Island, has returned to his permanent home in Toronto.

Fred W. Halls, of the Fred W. Halls Paper Company, Toronto, was in Montreal last week, calling upon the trade.

Morley Wilkins has joined the city sales staff of the United Paper Mills, Ltd., Toronto, taking the place of J. Moore, who passed away a few weeks ago.

W. P. Bennett, former president of the Rudd Paper Box Company, Toronto, and also an ex-president of the Canadian Paper Box Manufacturers' Association, who spent the past few months with his wife and family in an extended motor tour throughout the New England States, has returned to Toronto.

Joseph G. Gibson, secretary-treasurer of the Spanish River Pulp and Paper Mills, Sault Ste. Marie, Ont., accompanied by Lieut.-Col. C. H. L. Jones, vice-president of the Spanish River Pulp and Paper Mills, and P. B. Wilson, treasurer of the Canadian Newsprint Bureau, Montreal, attended the funeral of Charles E. Read in Ottawa recently. Mr. Read was a director of the Spanish River Pulp and Paper Mills.

Diana Paper Co. Affairs

[FROM OUR REGULAR CORRESPONDENT]

HARRISVILLE, N. Y., September 19, 1927.—Affairs of the Diana Paper Company, bankrupt, are shaping themselves to a point where it is officially stated that the improved mill at Harrisville will be ready for the operation of one machine in a week or ten days. The revamped mill, when the work is completed, will be one of the most modern in the country and will be capable of high production.

J. S. Hull, of Gouverneur, has been appointed assistant electrician at the Diana Mill and is now engaged in the work of repairing and improving machinery.

Another meeting of creditors of the company was held during the week before Referee in Bankruptcy John Conboy in Watertown. The meeting was taken up largely with hearing claims. Contested claims of the Seibert Paper Company, of Chicago, will be heard later, an adjournment being asked by attorneys for the creditor so that evidence could be prepared. The matter was adjourned until September 29. The Seibert Paper Company claims $3,500.

The claim of John O'Connell, former manager of the Diana Company, for $1,000 for services, was objected to and the matter was also adjourned to September 29. Attorney Philip Donlin, appearing for the Seaman Paper Company of New York, with a claim for $8,000, asked for an adjournment to consult with officers of the Seaman Company regarding a compromise offer made by the trustee which was to split the difference between the $8,000 claim and the $2,000 offer. Claim of the C. L. Amos Company for $5,326.11 for coal delivered was settled for $4,294.72.

On September 29 it is expected that Referee Conboy will hold a hearing in the affairs of the Diana Paper Company as operated under the management of Mark S. Wilder and Frank P. Wilder, it being contended by the Howard Smith Paper Company, Ltd., of Montreal, Canada, that they obtained preferences to which they were not entitled to, as creditors.

Fox River Valley Vocational Plans

[FROM OUR REGULAR CORRESPONDENT]

APPLETON, Wis., September 17, 1927.—Evening paper making classes will be conducted in vocational schools all through the Fox River Valley, including Green Bay, Kaukauna, Appleton, Menasha and Neenah, Wis., according to plans now under way. Arthur W. Bouford, of Rumford, Me., has been engaged as instructor and will divide his time between these cities. Each city of the valley was the object of a survey last spring by H. G. Noyes, state supervisor of paper mill education, and it was found that a series of classes would attract the notice of many workers. Foremanship classes probably will be the first units in the organization plan.

Builders of High Class

PAPER MAKING MACHINERY

I. P. Morris and Pelton Hydraulic Turbines and Accessories.

Modern High Speed Newsprint Machines embodying the following Special Features:

Van de Carr Slices.
Oscillating Suction Boxes.
Beloit Type Removable Fourdrinier
Suction Couch Rolls (Millspaugh Type)
First and Second Suction Press Rolls (Millspaugh Type)
Canadian Granite Top Press Rolls
Patented Internal Cantilever Anti-friction bearings for Table, Wire and Wet Felt Rolls.
Special Mechanism for driving Dryers, assuring safe running at high speeds.

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DOMINION ENGINEERING WORKS LIMITED
MONTREAL · CANADA

R. S. Kellogg Speaks On Forestry

R. S. Kellogg, secretary of the News Print Service Bureau, was the speaker at the September meeting of the Alan F. Waite Legion Post of Yonkers, discussing forestry in New York from the standpoint of the forester who believes in industrial utilization of the nation's timberlands.

"Forestry," he said, "is not the planting of young trees, it is not the cutting of mature trees, but an application to the growth of trees of the same principles used in the growing of any crop from the soil. The only difference is that in growing grain we harvest a crop every season, while in growing trees, we harvest a crop which takes many decades to mature. Forestry is the proper growing of trees for the use of man, not merely a sentimental preservation of the trees for scenic effect.

"The available timber in the United States for use as lumber, for manufacture of paper, is decreasing. The forester's problem is to grow enough trees to meet the requirements of the nation, and with this growing of trees for industrial use comes also the value of the forest for recreation, game preservation and protection of the watersheds from which we secure waterpower.

"The greatest danger to the forest is the damage done by fires. Stop the fires, and you will have gone a long ways toward providing the forests for the generations to come. The cigarette smoker is the cause, by unthinking carelessness in tossing his butt into the inflammable leaves by the roadside, of many fires. In dry seasons, smoking is absolutely forbidden in some government forests, and in Canada the forests are often closed in such seasons to all hunting and fishing parties. In the west, lightning causes an amazing number of fires.

"Turning to New York state, you will be surprised to know that nearly half the state's land is suitable for the growing of no other crop than trees. The forest possibilities of New York state, if these millions of acres were producing trees can hardly be imagined.

"We have a great state forest. But by the constitution of the state, the trees in this forest can not be cut for any purpose—it took a constitutional amendment to permit the cutting of trees for the construction of a state highway through the state's timberlands.

"This is not forestry. Forestry contemplates the growth and protection of trees for the development of a better forest area. A properly handled forest should be freed of its mature trees, which should be cut, and the lumber marketed, instead of allowing them to die, decay, and fall, becoming a menace to the surviving trees. This can be done, as is done by the United States Forest Service, on national forests, without graft, and bring a money return to the state. Wealthy owners of private homes in the forest area, however, want the public to maintain forever wild a state forest for their own pleasure. Again, I say, this is not forestry."

Mr. Kellogg, who had just returned from an 11,000 mile trip to the west, including the Alaskan forests, answered many questions as to forest problems, just as he did on his tour when as a member of the speaker's force of the Advertising Clubs of the World he addressed advertising and lumberman's clubs in the larger Pacific Coast cities.

Order Against Carthage Co. Denied

[FROM OUR REGULAR CORRESPONDENT]

UTICA, N. Y., September 19, 1927.—A memorandum denying the motion of the United States Mortgage and Trust Company for an order requiring C. E. Norris, receiver for the Carthage Sulphite Pulp and Paper Company, to pay $1,312.56 as interest on $27,536.27, local taxes paid by the bonding company, was filed in United States District Court here.

The opinion of Federal Judge Frederick H. Bryant, of Malone, was filed with the order. The motion was argued before Judge Bryant Wednesday. Eagle, Greenough and Day, of New York, appeared as solicitors for the Trust Company, and Attorney Francis E. Cullen, of Purcell, Cullen and Pitcher, represented the receiver, Mr. Norris.

The motion grows out of the action by Reginald F. Hammond, of the Mortgage and Trust Company, against the Carthage Sulphite Pulp and Paper Company. They sought payment of the interest for property on which they paid taxes subsequently refunded by the receiver.

The opinion bases the decision on the grounds that the receiver was justified in declining to pay the principal when he did. The opinion follows:

"The facts do not warrant the conclusion that the receiver acted other than any prudent business man would have acted under the circumstances. He could not safely comply with the decree until he knew there were no prior liens on the funds.

"The court nowhere ordered the payment of the interest and the acts of the receiver do not warrant its imposition as penalty. Moreover, the mortgage company, when it accepted principal, even though at the time of acceptance it protested against non-payment of the interest and demands its payment, lost its right to recover even in a court of equity.

"Interest, except in cases where there is a contract to pay it, does not constitute a debt capable of a distinct claim. It is incidental to the principal and can only be recovered with it. In such cases the acceptance of the principal, even under protest, without a separate agreement for the payment of interest, extinguishes the claim and bars a claim for payment."

G. S. Witham, Jr., Resigns From Union Bag

[FROM OUR REGULAR CORRESPONDENT]

HUDSON FALLS, N. Y., September 19, 1927.—George S. Witham, Jr., general superintendent of the mills of the Union Bag and Paper Corporation, has resigned and plans to identify himself with the manufacture of improved pulp and paper mill machinery. Mr. Witham has been associated with his father, George S. Witham, Sr., general manager of the Union Bag, and has had complete supervision of the Hudson Falls plant which includes the Fenimore Mill, the Allen Mill, the bag-making factory and pulp mill. It has been reported for several days that the younger Mr. Witham was to leave the Union Bag Corporation, but this was not officially confirmed until this week. The Hudson Falls plant will be operated with only one executive head and George S. Witham, Sr., general manager, will also take over the duties of superintendent.

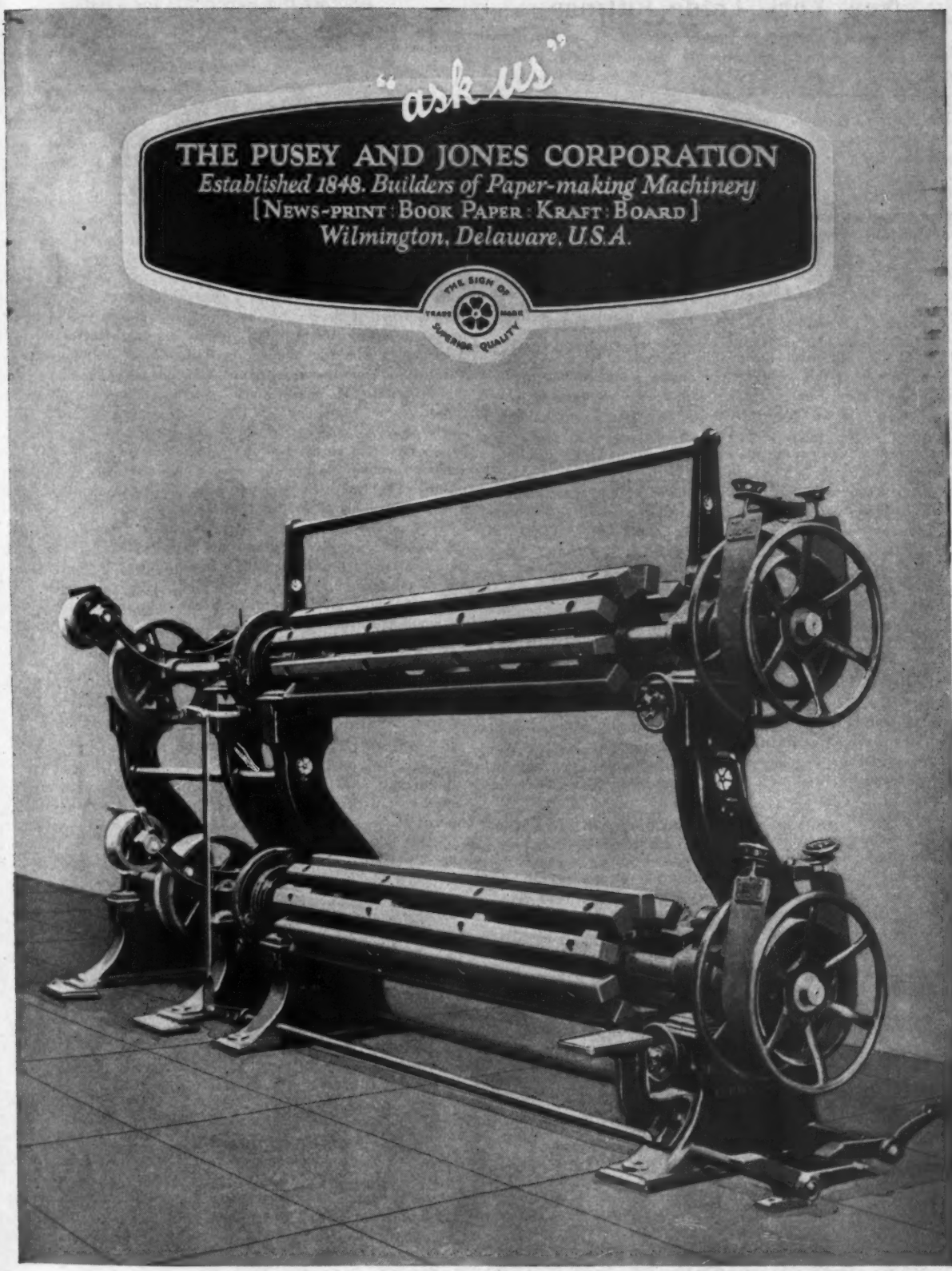
Beyond the statement that he intends to devote his time to developing improvements in pulp and paper mill machinery, Mr. Witham, Jr.'s, plans are not known. He is already the inventor of a number of improvements which are in successful operation in the Union Bag plants. Some of his inventions have already been placed on the market.

His latest invention, for which he has just been granted a patent, is an improved beater, which is described as a beater roll and a motor in combination, having their axes in alignment, a connection between the motor and roll for driving the same directly and the connection adapted to shear under predetermined stress. The roll and motor are constructed so that they may be moved together vertically, the axes remaining horizontal. The beater is claimed to have twelve new features.

A Distinguished Visitor

Advices have been received from M. W. Hellgren, technical manager, Uddeholms A/B, Skoghall, Sweden, who is a valued member of the Technical Association, that he will arrive in New York about September 20 which will be in time for him to visit the Chemical Exposition and also the fall meeting of the Technical Association in Middletown, Ohio, October 5 to 7.

As a number of the members of the Association have enjoyed Mr. Hellgren's hospitality in Sweden they will have the pleasure of renewing their acquaintance on his present visit.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Wilmington, Delaware, U.S.A.
THE SIGN OF TRADE MARK SUPERIOR QUALITY

Illustrating the Puseyjones Two-drum Upright Reel

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New York Trade Jottings

E. O. Reed, technical director of the Government Printing Office, Washington, D. C., was a New York visitor last week.

* * *

H. T. Merrick, of the Bureau of Chemistry and Soils, Washington, D. C., has been visiting his friends in the New York paper trade recently.

* * *

G. E. Lofgren has resigned from the Combustion Engineering Corporation, Ltd., and is now connected with the Ruths Accumulator Company, New York.

* * *

Dr. Hugh P. Baker, secretary of the American Paper and Pulp Association, addressed the Graphic Arts Conference Board last Thursday on the "Co-ordination of Activities in Allied Industries."

* * *

R. S. Maddox, the well known State Forester of Tennessee, was in New York early this week. He is making a tour of the Empire State and the New England States with a view of learning what these states are doing in forestry work.

* * *

There was an excellent attendance at the regular weekly luncheon and meeting of the New York Division of the Salesmen's Association of the Paper Industry, at the Canadian Club last Monday. All present thoroughly enjoyed the instructive discussion which took place on current business conditions.

* * *

H. P. G. Norstrand, president of the Saranac Pulp and Paper Company, Inc., who has been spending two months in Europe, will return to New York on the steamer *Columbus*, September 26. Mrs. Norstrand accompanied him on this trip, which took them through Norway, Denmark, Germany and France.

* * *

Alexander R. Entrican, engineer in forest products, of the New Zealand Forest Service, Wellington, N. Z., visited the News Print Service Bureau headquarters, New York, last week. Mr. Entrican is touring North America for the purpose of studying wood utilization problems in general, and especially those relating to pulp and paper. He is scheduled to return to New York in October.

* * *

For the coming year, O. M. Porter, assistant secretary of the American Paper and Pulp Association, will serve as secretary of the Trade Association Executives in New York City, an organization of managers and secretaries of national and local trade associations in the city of New York. This organization meets monthly at luncheon at the Hotel Astor, where questions and problems of vital importance in trade association work are presented and discussed. During the past six years, Emmett H. Naylor, secretary of the Writing Paper Manufacturers Association, R. S. Kellogg, secretary of the News Print Service Bureau, and Dr. Hugh P. Baker, secretary of the American Paper and Pulp Association, have served as presidents of the organization.

New Agencies for Provenworth

SPRING GROVE, Pa., September 17, 1927.—New agencies for PROVENWORTH, English Finish Book, have been established by the P. H. Glatfelter Company in Washington, D. C., and Syracuse, N. Y.

In the former city this well known paper will be handled by the F. T. Parsons Paper Company, while the J. & F. B. Garrett Company will be the representative in Syracuse, N. Y.

Both of these agencies have a stock of this paper on hand and will be in excellent position to furnish prompt service from stock.

On account of close proximity to the mill very quick service is possible on mill shipments.

Another Big Paper Mill for Pacific

VANCOUVER, B. C., September 14, 1927.—A crew of forty technical men working under D. C. Henry, noted dam and hydraulic engineer, of Portland, Ore., is making extensive surveys of the Nimpkish River country, Northern Vancouver Island, preliminary to the establishment there of one of the biggest pulp and paper and sawmill enterprises on the Coast.

The surveys, which have been carried on all summer and will probably continue all next year, are for the purpose of ascertaining fully the extent of power resources available and the natural conditions that will have to be confronted in laying out mills and providing for a thoroughly up-to-date civic community, which is expected to have a normal population of 6,000 persons when operations begin.

"The reason for the particularly extensive preliminary tests, consisting largely of drillings and runoffs, is that it is proposed to make use of practically the entire power capacity," a director of the company stated. The original estimate was that 25,000 horse-power would be obtained by harnessing the Nimpkish River, but it is probable that this will be tremendously increased through the utilization of interlocking lakes along an extended water course.

The work is being carried on by the Canadian Forest Products, Ltd., which is a reorganization of the old Beaver Cove Pulp and Timber Company, one of the pioneer pulp concerns of Vancouver Island. The International Harvester Company controls the company and is prepared to spend millions on the project.

The company already has a fifty-ton mill at Beaver Cove, but it has been idle for several years, and many features of the equipment are regarded as antiquated. Improvements to this and erection of the new buildings will cost approximately $10,000,000, it is estimated, but a much larger sum than that will be spent when the whole construction programme is carried out. It is proposed to build a 250-ton unit at first and increase this capacity later to 500 tons.

Canadian Forest Products, Ltd., own about five billion feet of timber, most of which is classified as first class pulp wood.

Paper Production in Mexico

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., September 21, 1927.—The department of National Statistics of the Mexican Government has recently announced through the press that 23,949 metric tons of paper were produced by the five paper mills of the Republic operating in 1926. Production was as follows: News print, 11,218 tons; book paper, 11,323 tons; carton, 1,121 tons; crepe paper, 182 tons; cigarette paper, 62 tons, and toilet paper, 43 tons.

The mills employed during the year 171 officials who were paid salaries amounting to $253,481, and 1,806 laborers who were paid wages amounting to $932,484. Raw materials of native origin to the value of $728,740 and of foreign origin to the value of $868,495 were consumed. The capital invested in the five mills was reported at $5,832,368, while the value of the output amounted to $3,113,435.

Bids for Government Paper

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., September 21, 1927.—The Government Printing Office has received the following bids for 11,365 pounds of 26 x 42 white rope drumhead paper: R. P. Andrews Paper Company, at 20.4 cents per pound; Whitaker Paper Company, 16.47, 15.47 and 20.7 cents; Dobler & Mudge, 20.85 cents; Reese & Reese, 20.85 cents; Lindemeyr & Harker, 20.8 cents; American Writing Paper Company, 19.5 cents; Walker, Goulard, Plehn Company, 22.5 cents; T. A. Cantwell & Co., 11.7 and 10.7 cents; Virginia Paper Company, 20.32 cents; and Barton, Duer & Koch Paper Company, 20.5 cents.

The Government Printing Office will receive bids on September 23 for 50,000 sheets (250 pounds) of 12 x 18 manila tissue paper.

Question No. 11

How Does Sectional Drive Increase Paper Production with the Same Paper Speed?

About SECTIONAL Paper Machine DRIVE

WESTINGHOUSE Sectional Drive reduces the lost production caused by shutdowns and paper spoilage.

Shutdowns occur rarely with Westinghouse Sectional Drive because there are few parts likely to get out of order. Mechanically-operated clutches, belts, and cone pulleys, open bevel and spur gears, line shafts with unsealed bearings—all these sources of trouble are eliminated in the Sectional Drive. And in their place are the simple and efficient Westinghouse motor-gear units in which all wearing parts are bathed in oil—and sealed.

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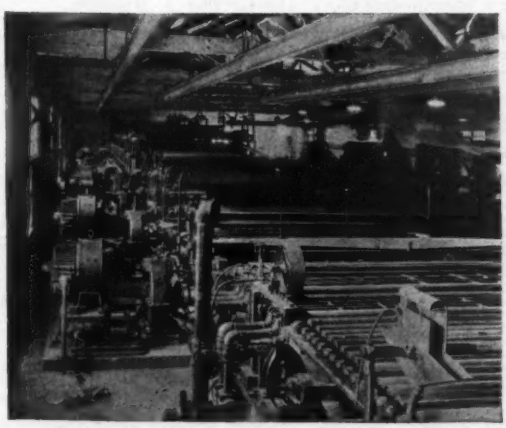

By reducing lost production, Westinghouse Sectional Drive saves the paper manufacturer huge sums annually—and it is but one of the economic advantages of this drive. For others, consult the Westinghouse paper specialist in the Westinghouse district office near you.

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PAPER TRADE JOURNAL
ESTABLISHED 1872

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PROGRESS IN STANDARDIZATION

Important progress in a dozen major industries is described in the Year Book of the American Engineering Standards Committee which has just been issued. An extremely wide range of work is covered, from bolts and nuts to a code for rock dusting coal mines, from specifications for railway ties to standards for methods of recording and compiling accident statistics.

There are now approximately two thousand individuals serving on sectional committees, the accredited representatives of over three hundred national cooperating bodies.

Substantial progress has been made in the work on bolts, nuts and rivets. One fundamental part has been completed and published, that on wrench-head bolts and nuts. Other parts, including slotted head machine screws and wood screw heads, track bolts, and carriage bolts, are well advanced. Most of the work on the nine sections of the project on pipe flanges and fittings is nearly completed and it is expected that several of these will be ready for publication in the very near future. One section, that dealing with high pressure fittings and flanges, has been completed and issued. Even before publication the work had already been of great value to industry, whose practice has now been brought into essentially complete accord with the draft standards. The first section of the work on machine tool elements, that dealing with T-slots, has been completed, as has also the first section of the work on gears, namely, tooth form of spur gears. A specialized but important piece of work completed is that of shafting keys, both plain taper and gib head.

In the mining industry work is in progress on fifteen projects, five of which have already been completed. Recommended practice for the drainage of coal mines, and safety rules for the installing and use of electrical equipment in coal mines have both involved unification of work on these subjects by the Bureau of Mines, the American Mining Congress and other mining organizations. One of the most important projects of those recently approved relates to rock dusting of coal mines to prevent danger of coal dust explosions. Since its adoption insurance companies covering mine insurance have announced that compensation policies will not be issued on gaseous and dusty mines unless they are rock dusted.

More than a hundred million railway ties are produced in this country yearly. During the year specifications satisfactory to both the steam and electric railways have been agreed upon for the first time. It is an interesting illustration of the manifold inter-relationships of modern industry that eleven organizations were officially represented on the sectional committee through which this unification of specifications has been accomplished. Specifications for tubular steel poles and for girder rails have also been unified and approved.

The code for building exits, which has involved extensive work on the part of a number of organizations over a period of years, has been completed and issued. The revision of the specifications for fire tests of materials and construction, involving some important changes, has been completed and published. The work on spiral steel rods for concrete reinforcement, as submitted by the National Committee on Metals Utilization, was approved. Notable progress has been made in the work on specifications for cast iron pipe. The work on rating of rivers has reached the stage in which the sectional committee has deemed it desirable to seek formal international cooperation, with a view to bringing about uniformity in the various countries in the world.

Twenty-four of the fifty codes on the national safety code program have been approved by the American Engineering Standards Committee. Among those approved during the year are those for the prevention of dust explosions in half a dozen important industries, codes for forging and hot metal stamping, automobile brakes and brake testing, and revisions of the codes for punch presses, and abrasive wheels, and of the gas safety code.

A particularly important development has been the revision of the "National Electrical Code," which is the industry's bible for wiring devices. This included a settlement, by almost unanimous action, of the controversy of three years' standing, over the admission, as approved material, of non-metallic sheathed cable. This new material was approved for limited uses.

In connection with the safety code program, and upon the initiative of the state industrial commissions, arrangements have been made for the revision of the standard plan of reporting and compiling accident statistics under the procedure of the American Engineering Standards Committee. This plan forms the general basis of the accident statistics of the various state governments and of the casualty insurance companies.

Recent formal requests for new undertakings relate to face to face dimensions of flanged valves, plumbing equipment, screw threads for rigid electrical conduits, speeds of driven machinery, trimmed paper sizes, and specifications for household refrigerators.

A copy of the Year Book will be sent upon request to the American Engineering Standards Committee, 29 West 39th Street, New York.

LESS FRAUDULENT BANKRUPTCIES

The number of fraudulent bankruptcies reported throughout the country is steadily decreasing, according to the National Association of Credit Men, which is carrying on a nation-wide fight against commercial criminals.

Mr. J. H. Tregoe, executive manager of the association, reports that during the twelve-month period ending August 31, 1927, the Credit Protection Department of the organization accepted for investigation 320 less fraud complaints than were reported in the corresponding period ending August 31, 1926.

From August 31, 1925, to August 31, 1926, the association accepted 936 complaints, and from August 31, 1926, to August 31, 1927, the number of complaints dropped to 616.

In spite of the fact that the number of cases reported has been decreasing, convictions have been mounting. During the 1925-1926 period mentioned, 120 commercial crooks were sent to prison through the work of the Credit Protection Department, which runs down the crook, secures the evidence necessary to convict, and prepares the case for a quick and successful trial. During the 1926-27 period, 161 crooks were convicted.

The decline in crooked failures is due in large measure to the deterrent effects of rigorous prosecution. The policing of business by fraud protection funds has had a remarkable effect in curbing the tendency of prospective commercial thieves. An organization operating not for profit is much better fitted to police and prosecute than the individual creditors. The crooks know that when caught they cannot settle or compromise. This knowledge that a settlement will not avail makes the prospective dishonest bankrupt look before he leaps.

Of course, the large number of convictions reduces to some extent the floating supply of professional bankruptcy engineers. The successful crooked bust calls for the exercise of exceptional technical knowledge. Assuming that a business man has a crooked tendency or inclination, he may not be fitted for this kind of crime, and probably requires a specialist to aid him. Reducing the number of such individuals by conviction or indictment is a highly important factor in lessening fraud.

The credit men's organization has 434 indictments pending against fraud suspects throughout the United States, and in two years of operation has lost only 25 cases brought to trial.

Republic Paper Products To Build

[FROM OUR REGULAR CORRESPONDENT]

RICHMOND, Va., September 19, 1927.—Twenty acres of land, located at the city limits in East Highland Park and on the main line of the Chesapeake and Ohio railway, have been purchased by the Republic Paper Products Corporation and contracts have been awarded for the construction thereon of a new plant, it was announced today.

The concern expects to move to its new plant about January 1. It is now located at 1408 West Marshall street.

The main plant will occupy four and one-half acres and the factory buildings will be modeled after the plans used by the General Motors Company in the erection of its new plant in New Zealand. The buildings will be of steel, concrete and glass. Fireproof in every respect, the buildings will also afford full daylight throughout the manufacturing area. The Truscon Steel Company, of Youngstown, Ohio, was given the contract for the steel work, and J. W. Atkinson & Co. received the contract for the concrete construction.

The Republic Paper Products Corporation, it was announced, plans to develop a community of homes for its workers. A park, including a swimming pool for the exclusive use of the employees, will be one of the features.

The concern now employs between 150 and 200 people, but will begin operations in its new plant with 200 workers. The company, which manufactures a larger quantity of paper bags than any other concern south of the Mason-Dixon line, is undergoing material expansion, it was said. In addition to the plant here, it has one in Brooklyn, N. Y., and is now building a third in Bastrop, La., near the new mill of the International Paper Company.

Canadian News Print Industry Threatened

Anapolis Royal, N. S., September 19, 1927.

EDITOR, PAPER TRADE JOURNAL:

The amount of unmanufactured pulpwood Canada is shipping to the United States this year will supply American paper manufacturers with low cost raw material sufficient to manufacture more than a million tons of news print. This paper, if made in Canada, would enable every one of our news print mills to operate at 100 per cent capacity instead of, as they are now doing, at 80 per cent and less. (Every month the percentage is being reduced by the incoming of new machines.) It would bring into Canada almost four times as much revenue as it now brings in shipped as pulpwood, practically all of the difference being distributed to Canadian workmen as wages. As it is at present, it not only deprives a Canadian industry of employment at home but it furnishes competing manufacturers abroad with the raw material to depress the market for the Canadian product.

Still more serious, the practice of the Canadian government in permitting this wood to be exported in its unmanufactured state, without contributing even a penny to the public exchequer, is one of the chief contributing causes of the condition now confronting the Canadian news print industry and which, unless speedily righted, is likely to result in the industry's complete collapse. Such a collapse of Canada's second most important industry would be the worst financial calamity this country has ever experienced.

In the very near future when all these new paper machines are completed and seeking a market for their product I can see nothing (unless the outflow of raw material is stopped) to prevent news print from dropping from its present price of $65 a ton to $55.00 or even $50.00, despite the artificial means now being employed to keep it up. Such a drop, coupled with enforced reduction of output, would put every news print mill in Canada on a non-profit basis, as is clearly evidenced by the recently published balance-sheets of some of the companies.

The prodigal use of pulpwood and its unrestricted exploitation for American consumption has had the effect, furthermore, of reducing the market price of ground wood pulp to around $10 a ton less than it costs most manufacturers to produce it, so that not only are the paper manufacturers hard hit by this practice, but so also are the ground wood mills which produce that grade of pulp for foreign or domestic use.

Despite these facts, the source of the pulpwood supply is daily becoming more remote, to such an extent that, even now, some of our mills are forced to go to far away Anticosti Island and Newfoundland for their wood supply. Wood is at the present time being shipped from Newfoundland to Portland, Maine and as far west as Oswego and Fulton, N. Y., a distance of more than a thousand miles.

In a short time the pinch in the wood supply will assert itself and, when a wood famine ensues, the expansion of the papermaking industry will come to a stop and the price of paper will go up. Just at present, however, and for the next three or four years the condition of the industry will continue critical, as it is today, unless steps are taken to shut off the exportation of raw wood.

It has been suggested that, if the Canadian mills want this feeland wood, they should compete in the open market for this product of Canadian soil, but the day that they are obliged to do this, to any large extent, the price of pulpwood will be forced to such heights that neither country could afford to manufacture paper at anything like today's prices.

Is it because of the incompetence or complete indifference of our politicians for the welfare of Canada that this serious situation is allowed to continue, *or is there another reason?*

It might be well for the Canadian people to give this serious question a little sober consideration before it is too late, or it will soon be another case of locking the stable door after the horse is stolen.

FRANK J. D. BARNJUM.

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Technical Association of the Pulp and Paper Industry

AN ORGANIZATION FOR THE ENCOURAGEMENT OF ORIGINAL INVESTIGATION AND RESEARCH WORK IN MILL ENGINEERING AND THE CHEMISTRY OF PAPER, CELLULOSE AND PAPER-MAKING FIBERS GENERALLY; IT AIMS TO PROVIDE MEANS FOR THE INTERCHANGE OF IDEAS AMONG ITS MEMBERS IN ORDER THAT PROCESSES OF MANUFACTURE MAY BE MADE MORE EFFICIENT AND IMPROVED ALONG TECHNICAL LINES.

Conducted by W.G. MacNAUGHTON, Secretary

Standard Celluloses *

Prof. Dr. Carl G. Schwalbe, Member TAPPI, Eberswalde.

For the successful scientific investigation of natural products, chemical purity is a very necessary consideration; the same is true in the study of cellulose. Nevertheless, this consideration of complete purity must be largely disregarded in the case of cellulose, because it appears to be very difficult or almost impossible to completely purify it. To be sure, there is a general conception that cotton wadding and filter paper are pure cellulose. However, it will be seen that the energetic purification to which these materials are subjected produces a certain degradation. Cotton wadding is generally overbleached and contains some stearic acid. Filter paper is extracted with hydrochloric and hydrofluoric acids in order to remove the ash constituents and therefore frequently contains hydrocellulose. Furthermore, the product is not always homogeneous, for it may contain flax, as well as cotton fibers. In addition to these products which have been used in the study of cellulose, there is the cotton fabric used in the manufacture of alizarin. In the production of alizarin a very specially pure fabric is needed, so that the fabric produced by the textile industry for this purpose is probably the purest product prepared from cotton. The use of this very highly recommended fabric has, in general, been confined to the circle of textile chemists. The use of a fabric, however, has the objection that it consists of woven fibers; in the weaving process the individual fibers may be subjected to changes which influence their reactivity.

These facts prompted Schwalbe [1] and Robinoff [2] to attempt the preparation of a pure cotton cellulose. They used the old method of Tamin (Tomann) for the purification of carded cotton, which is much more suitable than loose wool, because the seed hulls and leaf residues have, for the most part, been removed. The method for standard cellulose proposed by Schwalbe and Robinoff or by Schwalbe and Bay [3] served as a type for comparative investigations on wood cellulose, such as those carried out by Schwalbe and Johnsen. In 1913 Schwalbe [4] proposed that the German textile industry prepare a large quantity—a couple of hundred kilos—of the purest cotton cellulose and that this be furnished to all investigators interested in the chemistry of cellulose, in order that, starting with the same raw materials, the results of the investigations might be comparable. Schwalbe was of the opinion that many of the differences in the results of various investigators were due to a difference in the raw materials used. The world war prevented the carrying out of this plan in Germany. Bjarne Johnsen, however, had the opportunity to do so in Canada and the United States. It is due to him and to Harold Hibbert that the Division of Cellulose of the American Chemical Society formed a Committee (composed of Hibbert, Johnsen, Mitscherling, Hendersen and Wise) for the purpose of studying the process of purification of cotton cellulose and the preparation of a large amount of such cellulose. This Committee has completed its work [5] and American chemists have had at their disposal since then pure cotton cellulose for scientific investigations.

In testing the purity of this cellulose the Committee made use of the methods proposed by Schwalbe for testing chemical purity, which, according to the present position of science and industry, are no longer suitable for characterizing a standard cellulose as regards to its chemical purity and chemical reactivity. The requirements which must be met for a standard cellulose for scientific purposes are considerably different from those for a cellulose for a technical purpose. We must therefore differentiate between scientific and technical standard cellulose.

Scientific Standard Cellulose. Preparation of Pure Standard Cellulose.

The above mentioned preparation of pure cotton cellulose depends upon repeated alkaline cooking of cellulose without pressure, after the fats and waxes had been removed by extraction with alcohol and ether. The alkaline cook and thorough washing is followed by bleaching with very dilute sodium hypochlorite solution. The method used by the Committee was improved by Correy and Gray,[6] in that the alkaline liquor is kept in constant motion during the cooking; the relatively high ash content of the purified cellulose was decreased by treatment with one per cent acetic acid solution.

Testing the Chemical Purity of the Standard Cotton Cellulose.

The chemical test for the purity of the standard cellulose should show that it consists exclusively of the compound $(C_6H_{10}O_5)_x$, a chemical compound which, properly hydrolyzed, yields only glucose. Recently Klason [7] has defined cellulose as the residue obtained by treating cellulose-containing raw materials with a sodium bisulphite solution of very definite concentration at 98°C. Neither this method nor the usual method of Cross and Bevan (determination by chlorine and sodium sulphite) gives a completely uniform cellulose if the raw material contains pento-

* Translated from Der Papierfabrikant, 24: 769-775 (1926), by Clarence J. West.

[1] Schwalbe, Die Chemie der Cellulose. Berlin, 1911, p. 602.
[2] Robinoff, Dissertation. Darmstadt, 1912, p. 20.
[3] Bay, Dissertation. Giessen, 1913.
[4] Schwalbe, Färber-Zeitung, 1913, p. 433.
[5] J. Ind. Eng. Chem. 15: 748-756 (1923); Faserstoffe und Spinnpflanzen 6: 1-5 (1924).
[6] J. Ind. Eng. Chem. 16: 853, 1130 (1924).
[7] Svensk Pappers Tidning, July 15, 1924; Zellstoff u. Papier 4: 213 (1924).

sans. These methods are therefore not suitable for the determination of the pure cellulose content. Organic elementary analysis gives no conclusive evidence as to the presence of pure cellulose, since the percentages of carbon and hydrogen in the impurities are very similar to those of cellulose and the molecular or aggregate size plays a certain role. The cellulose content is probably most simply and best determined by the estimation of the alpha-cellulose or the baryta resistance number, even though in this method the pentosan residue remains with the pure cellulose. In crude cotton cellulose, however, the pentosan content is so small that the methods just named for establishing the cellulose content of standard cotton cellulose appear to be suitable. More important than the determination of alpha-cellulose is that of the probable impurities (incrusting substances). For cotton cellulose the most important of these is the determination of the content of resin, fats and waxes.[8] A low value for these substances in the purified cellulose indicates a successful purification. The same is true of the ash content.

The determination of nitrogen was formerly considered important but recently[9] it has been claimed that no conclusion regarding the purity of a cotton can be drawn from its nitrogen content. Besides other natural incrusting materials, some cellulose dextrins and natural oxycelluloses, there must be considered the hydro- and oxycellulose resulting during the operation of purification. Schwalbe's copper number is generally employed for their determination[10]. In addition to the copper number, the viscosity[11] of the copper oxide ammonia solution should probably be measured, since it is known that the viscosity decreases with the content of hydro- and oxycelluloses. These solutions are relatively sensitive, so that difficulties may be encountered in these viscosity determinations, as Ost has established. Viscosity determinations of solutions of cellulose, prepared by means of sodium hydroxide and carbon disulphide, are more easily carried out. According to Hess[12] the polarimetric investigation of a copper oxide ammonia solution offers possibilities in the determination of the chemical purity of cellulose.

Chemical Reactivity.

The necessary testing of a standard cellulose is not completed with the determination of the cellulose content and the incrusting residue. It appears equally important to determine the chemical reactivity, which is dependent upon many factors and especially upon the degree of swelling, the wetting capacity and the surface conditions.

The degree of swelling is usually determined by the so-called copper hydrate number or the hydrolysis number, according to Schwalbe; these methods are based upon the facts that strongly swollen cellulose absorbs more copper from Fehling's solution than a slightly swollen cellulose and that a strongly swollen cellulose is more completely hydrolyzed by boiling with dilute acids. The hydrolysis number method has been improved recently by Bernardy,[13] so that perhaps it may deserve further consideration.

The degree of swelling is also related to the *sedimentation volume*[14] and to the *ferric acetate absorption* of cellulose,[15] methods which appear to have promise but must be further perfected and tested. The ferric acetate method, epsecially, must be carried out with larger amounts of cellulose in an experimental hollander, by means of which one may obtain values for the absorbed ferric oxide by simply ashing the sample, thus avoiding the more delicate titration.

The degree of swelling is also dependent upon the age of the living fiber (lebensalter) and the duration of storage of the fiber after the vitality of the protoplasm has ceased (Lageralter); thus, in the case of cotton cellulose, the mature fiber has a different degree of swelling from that of the immature fiber. The reactivity of the cellulose also depends upon the time of storage, since the gradual drying has a detrimental effect upon the chemical and physical reactivity[16].

It is apparent without further discussion that the wetting capacity of a fiber must have an influence on its chemical reactivity. This property has received consideration in the textile industry but it is observed only sporadically in the pulp and paper industry.

As regards the influence of the surface of the fiber upon its chemical reactivity, one must consider in the case of cotton cellulose the extent of the preservation of the so-called cuticle. Apart from the surface differences dependent upon the cuticle, one may assume from the observations upon absorbent charcoals and graphites that the surface characteristics of the fiber must influence its reactivity.[17] According to American authors the various harvests of cotton from the same habitat may be distinguished by observations in the darkfield microscope. The fine structure of the fibers varies according to the conditions of growth, the climate and the habitat. The investigation of surface development and the fine structure of the fiber is yet in its infancy..

For scientific purposes the examination of a standard cotton cellulose first consists in the determination of alpha-cellulose, the resin, fat and ash content, the copper number, the copper hydrate number and the hydrolysis number. The index for such a pure cellulose is, according to the American Committee or to Correy and Gray,[8] the following: alpha-cellulose, 99.84 per cent; ash, 0.26 per cent; copper number, 0.17; cellulose number, 0.28 per cent; hydrolysis number, 2.9.

Scientific Standards for Straw, Flax, Hemp and Wood Celluloses.

It is very desirable that scientific standards be established for straw, flax, hemp and wood celluloses. Even if, as has been recently established, the cellulose of straw and of wood, for example, are identical with that of cotton, still, even for the same purity, the chemical reactivity of these celluloses may differ materially from that of cotton cellulose. As yet no very serious attempt has been made to prepare completely pure straw, flax or hemp cellulose. We have been content with celluloses which contain small amounts of incrustations, especially pentosans, because it is very difficult tot remove the last traces of such impurities without large losses in the yields. Very pure wood cellulose, also, can be obtained only with a considerable decrease in yield and there is no doubt that the wood cellulose thus purified still contains residues of insoluble resins and the like.

Technical Standards.

If the possession of standard celluloses for scientific work is a recognized necessity, this is all the more true of technical standards, under which one may consider type celluloses. Such types must be developed for the preparation of nitrocelluloses, cellulose acetate, viscose and for the manufacture of different kinds of papers. The question as to what is to be considered a standard rayon (artificial silk) pulp, a normal pergamyn pulp, etc., has, up to the present, never been exactly answered. The interest in such technical standards has existed in Canada and the United States for some time. In 1914 C. B. Thorne of the Riordon Pulp Corporation and the writer started an extensive investigation of technical standards. The world war prevented the carrying out of these plans. Meanwhile, however, the interest in technical standards has become general and is now a real necessity to the consumer of cellulose. For example, the method of estimating cellulose by crumpling and rubbing is subject to such a strong personal factor that reliable results are not to be expected and especially such results cannot be expressed numerically. If one resolves to establish technical standards for the ordinary commercial celluloses, its testing would include not only the investiga-

[8] Clifford, Higginbotham and Fargher, J. Textile Inst. 15: 120 (1924).
[9] Ridge, J. Textile Inst. 15: 94 (1924).
[10] Schwalbe, Z. angew. Chem. 23: 924 (1910).
[11] Farrow and Neale, J. Textile Inst. 15: 137-172 (1925); Sherrard and Blanco, Paper, 1923, No. 22: 13; Hall, Pulp Paper Mag. Canada 22: 870 (1924).
[12] Hess, Messmer and Ljubitsch, Ann. der Chemie 444: 287-327 (1925).
[13] Bernardy, Z. angew. Chem. 39: 259-261 (1926).
[14] Schwalbe and Feldtmann, Wochbl. Papierfabr. 56: 251-256 (1925).
[15] Schwalbe and Feldtmann, Papierfabr. 23: 589-595 (1925).
[16] Schwalbe, Kolloid-Z. 39: 178-180 (1926); Papierfabr, 24, Festheft: 38.41 (1926).
[17] Schwalbe, Z. angew. Chem. 37: 218-222 (1924).

tion of chemical purity and chemical reactivity, as outlined above under the scientific standards, but there must also be considered, if the cellulose is not to be used for chemical purposes, but for the manufacture of paper, the additional factors of the surface properties, the roughness and the mechanical (strength) properties. In the preparation of such standards it is very desirable that the number of necessary tests be kept to the lowest possible minimum, since it does not appear feasible for the commercial world to use an extensive series of tests for characterizing a standard. The opposite is true if one is concerned with the marketing of a new product; in this case there should be a very extensive and exhaustive testing of the material. The existence of technical standards would, at first, be a very objectionable burden to pulp manufacturers. However, the regular examination of the pulp produced by individual cooks would reveal the cause of the previously existing differences, would lead to more accurate factory control and undoubtedly would lead to refinements in cooking methods and possibly to the discovery of entirely new types of cellulose.

Technical Standard Cotton Cellulose

Here, again, one must differentiate between two different kinds, depending upon whether the cotton cellulose is to be used for chemical purposes or for the manufacture of yarns and fabrics The cotton to be used for further chemical treatment is known, in its loose state, as linters. One should test this for ash, fat, waxes, copper number, lignin, degree of swelling and viscosity. Even among these methods one should endeavor to make a selection, in order to have at his disposal testing methods which may be carried out in the shortest possible time. On the other hand it may be necessary to develop further the testing scheme if one wishes to obtain information about the chemical value of mature and immature fibers and of short and long fibers.

In this connection the work of Bright[18] is of interest; he recognizes the immature fibers (as well as the damaged ones) by the deeper color tones of the dyed fibers after swelling with sodium hydroxide.

Technical Flax, Hemp and Jute Standards.

In the same way that technical standards are to be developed for cotton cellulose, must standards be established for flax (linen), hemp and jute as the most important textile fibers. The loose fibers play a relatively very modest role in the industry. They are very seldom treated chemically. The interest is thus concentrated in the yarn and fabrics prepared from these fibers and in the rags resulting from the used fabrics and in the so-called halfstuff prepared from these rags. While standards can hardly be applied to these rags because of their lack of homogeneity, it is possible to develop such standards for the so-called halfstuff prepared from them. The testing methods would, in general, be similar to those for wood pulps.

Standard Wood Pulp (Ester-Standard).

Those wood pulps which are to be subjected to further chemical treatment are referred to in the following as ester-standard wood pulps. The testing for chemical purity includes the determination of the alpha-cellulose, lignin, pentosans, resins, fats, ash, viscosity and, more recently, the degree of swelling, which plays a considerable role, because it indicates the chemical reactivity of the wood pulp fiber.

The determination of lignin gives rather unsatisfactory results because the acids used in the determination, sulphuric and hydrochloric, not only dissolve the cellulose but also partially decomposes the lignin contained in the wood pulp, so that a change in the concentration of the sulphuric acid from 72 to 62 per cent gives different lignin values.[19]

In the determination of pentosans, the estimation of the furfural split off by 13 per cent hydrochloric acid by precipitation with phloroglucinol is not free from error, because according to the fundamental investigations of Klingstedt[20] and Gierisch[21] the phloroglucinol precipitate is not always entirely due to furfural. On the other hand the calculation from furfural to pentosans is not always correct, because not only the pentosans split off furfural but there are acids present in the so-called pentosans, which likewise split off furfural, although they have nothing to do with the pentosans. Under these conditions the old wood-gum determination may assume a new importance, if it is possible to utilize the recently described rapid method for the estimation.

The degree of swelling of wood pulp is relatively simply carried out according to the so-called strip method of Schwalbe,[22] which gives surprisingly good results with the normal pulps but behaves abnormally with the highly pressed pulp.

One must recognize clearly that wood pulp cannot consist of uniform fibrous material. The fibers of spring wood are very easily overcooked, while those of autumn wood may be a little undercooked. A part of the fiber is impregnated with rosin and fat, while another part is not. Certain fibers will be cut during the preparation process, while others will pass through with intact cells. All these factors must influence the chemical reactivity. It is therefore evident that under these conditions samples from different places in one and the same pulp will give very different analytical data. Therefore, the proper sampling of wood pulp is a very important affair. Ordinarily only little material is furnished for an analytical investigation, because it is the general opinion that only a few hundred grams are necessary for the analytical testing. That is true, but these few hundred grams must be selected from very many places in the pulp sample and from many samples in order that the results may be true average values.

The chemical reactivity is dependent not only on the degree of swelling but also on the wetting capacity, on the age and probably on the surface properties, factors which, up to the present time, have had no consideration. Every increase in the number of necessary tests must appear serious from the standpoint of the technical man but if any advance is to be made, one must consider at first all the possible testing methods, so that later, by a rigorous selection, the number may be decreased to those actually necessary.

Standard Wood Pulp (Paper Standard)

A very different point of view from the above must be taken when considering the technical standards for cellulose which is to be used for paper manufacture. Here one wishes to know what constitutes a strong, tough, compact fiber, a pergamyn pulp, a normal bleaching Ritter-Kellner or Mitscherlich pulp. The chemical composition of the fibrous material is of no interest to the paper maker as long as the presence of certain impurities (incrusting materials) does not unfavorably influence the physicochemical and mechanical properties of the fiber or that the finished product, the paper, is not less permanent and does not lose in whiteness. Because of this the number of chemical tests is considerably decreased. For example, there is no interest in the amount of pentosans in a fiber. In place of the lignin determination, the degree of digestion, for example, the chlorine consumption number, is used.[23] The testing for resin and fat is of interest only so far as it concerns the sticky or viscid rosin which produces difficulties in transforming the pulp into paper. On the other hand the bleaching qualities are regularly determined and the degree of swelling must be carefully considered because of its relation to slime formation in the beater. The wetting capacity is also important because it is obvious that the beating process must be retarded if all the fibers are not wetted at the same rate by water. Without water there is no swelling and without swelling there is no beating to slime.

The study of the surface properties of fibers seems to be of

[18] Textile Ind. 17: 396 (1926); Cellulosechemie 7: 163 (1926).
[19] Schwalbe and Lange, Z. angew. Chem. 39: 606-608 (1926).
[20] Klingstedt, Z. anal. Chem. 66: 129 (1925).
[21] Gierisch, Cellulosechemie 6: 61, 81 (1925).
[22] Schwalbe, Kunstseide 7: 286 (1925); D'Ans and Jäger, Kunstseide 7: 252-256 (1925); Faust, Cellulosechemie 7: 153-155 (1926).
[23] Schwalbe and Sieber, Chemische Betreibskontrolle, 2nd ed., 1922, p. 272.

special importance. The strength of the finished paper depends upon the felting properties of the fibers, thus upon their pliability, for which there is no numerical expression and upon their surface properties. The wood pulp fibers have, to a certain extent a relief surface, because of the stomata. One can believe that if the surface is rough and ridged, the rough fibers will felt better than smooth fibers. The surface properties of the fibers depend to a large extent upon the cooking process. One can imagine that, under certain conditions, the cooking is accompanied by an actual roughening of the surface, to be sure at the expense of the strength of the fiber. One may further assume that through the use of the Jordan and other machines, the fibers are subjected to a rubbing together, which produces a smooth surface, the cell wall becoming thinner with a final unfavorable effect on the strength properties and the felting properties.

Further, the age of the fibers must be considered in relation to the effect on the surface properties. In a fiber ageing means a shrinking and a hardening of the surface, changes which decrease the pliability and the felting capacity. It appears to be very difficult to express the difference in the surface properties numerically. At first is seems that one will have to be satisfied with a description of the fiber surfaces. In this connection the dark-field microscope should be helpful.[24]

The mechanical properties of wood pulp (strength and extensibility) have been studied for many years. While in the textile industry the determination of the strength of a single fiber offers no difficulties, this is not true of wood pulps, because of the shortness of the fibers. The tests must be carried out on the paper made from these pulps; the pulps must be beaten in a ball mill and the sheets formed under definite conditions of pressure.

[24] See Lloyd Jones, Paper Trade J. 83, No. 16: 56-65 (1926).

Rayon Standards.

In rayon standards great emphasis is laid upon the degree of swelling and the wetting capacity because of the later dyeing of the material. The mechanical properties are also important and also a measure of the surface luster.

Conclusions.

The technical standards, as here outlined, assume uniform testing methods; without such methods internationally accepted methods are impossible. However, the testing methods are still in a state of flux. It is most difficult to secure international agreement for these methods. There are two factors that enter here: first, the methods are being constantly changed and improved; secondly, it is necessary that a given testing method should continue in use for a longer period of time in order that comparable results may be obtained. It would seem that the method of working of the leather chemists might be adopted; their methods are revised by international agreement every five or ten years; during the interim, the methods are international standards. In view of the importance of the technical standards, it is desirable that some compromise be effected.

Colloidal Chemistry In Papermaking*

By Dr. Rudolf Lorenz

A well known textbook on the technology of papermaking begins with these words: "The manufacture of paper is essentially a mechanical process." Contradicting this exclusively mechanical theory, I definitely take the attitude that papermaking is *essentially a physico-capillary and colloidal-chemical process.*

1. Capillarity and Swelling in Papermaking

It is not the mechanical processes like the floating and the settling out of the reduced fibers on the papermachine wire, nor is it the mechanical power that runs the papermachine and moves the fibrous mass on it, that are the basic factors in the formation of the sheet of paper. The leading part here is played by the *surface energy of the vegetable fibers.* The building of papermachines would hardly be feasible were it not for the ability of the fibers to hold on to each other and to hold on to the felts and cylinders of the machines.

On cylinder machines which are almost exclusively used for the manufacture of wood pulp and board, the difference in the degree of this capillary attachment is made use of for the automatic transfer of the wet sheet from the wire screen to the felt and from the felt to the metal press roll.

The physical capillary phenomena likewise play an important part on the horizontal papermachine wire (Fourdrinier), especially on the wire, where only the greater part of the water that is occluded or held by capillarity runs off, and where, as the dehydration processes gradually become stronger, the sheet of paper is formed thanks to the felting and compacting of the swelled fiber layer.

W. Ostwald, in his article "On the Dispersoid Chemistry of Peat," expresses himself regarding the "capillary mutual orientation of moving particles," which also play a determining role in the formation of the sheet of paper, in the following manner: "Just as water in stationary capillary vessels rises higher as the vessels are made narrower, so, on the other hand, moving capillary walls are compressed harder as the layer of water between the walls becomes thinner. . . . Thus, as a moving capillary system is made drier, there gradually and automatically takes place a compacting of the capillary walls, i.e., of the solid component parts. If the capillary water layer is not of uniform thickness, then the movement of the moving particles will continue until these assume the most uniform arrangement possible along with the closest mutual proximity." A. Gausding, in his "Handbook of the Production and Uses of Peat," expresses himself in the same sense regarding the characteristic natural tendency of the gruel-like, finely ground fiber mass to become more compact as the water evaporates and, accordingly to occupy the least space, i.e., to shrink. This shrinkage, which, according to data of P. Klemm, may amount to 30 per cent of the length of a strip of paper free to move, and must be taken account of in the regulation of the speeds of the various parts of the papermachine; otherwise the paper web may not be able to stand the tension and may break. As is known from experience, the amount of shrinkage varies within wide limits, depending upon the thickness of the paper and the nature of the fibers used, and for each grade of paper the relative speeds of the separate parts of the papermachine are regulated by means of cone drive pulleys.

The wet paper web is further dehydrated by the capillary suction of the guiding felts and, finally, is passed on to the heated drying cylinders. The hot cylinders cause the coagulation of the cellulose gel. Thus is evaporated the water which is colloidally combined during swelling and which could not be removed either by the suction boxes and presses or by the sucking action of the felts. In doing this we must, of course, avoid overdrying.

The Most Important Factors

The capillary-physical and the colloidal-chemical phenomena are thus the most important factors during the formation of the paper web on the papermachine. But an old saying of the papermaker's has it that paper is really made in the beater and not

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on the machine. In the beater the gel of the raw vegetable materials (linen and cotton rags, chemical pulp, groundwood, etc.) is separated into its separate component parts as a result of swelling and of mechanical grinding. No amount of care during the dehydration of the paper web on the papermachine will avail, if earlier during storing and during treatment in the beater the proper conditions of hydration have not been observed. Schwalbe, for example, reports that at a certain paper mill it was found impossible to prepare hydrated ("slow") stock from groundwood which lay exposed to the sun; similarly, moist chemical pulp which was stored for a long time resulted in paper of lower opacity than was made from the same pulp when directly used from the nearby pulp mill. In the first case (groundwood) irreversible dehydration (Entquellung) took place, while in the second case (chemical pulp)—excessive (above the maximum) swelling.

Investigations of Swelling

The first systematic investigations of the phenomena of swelling in the beater were made by Schwalbe, R. Herzog, also R. Katz studied swelling by means of Roentgen-photography. Swelling starts at the outside surface of the fiber, then gradually penetrates to the inner surface of the tubular spaces in the fiber as these are evacuated of the air bubbles which are in them and are saturated with water. After 6 to 9 hours, swelling reaches its maximum. If, at the same time, the fiber is being mechanically worked in the beater, then part of the fiber is gradually changed into a homogeneous slime, which on drying becomes a structureless horn-like mass. This slime is of great technical importance, since when present in proper amount in the fibrous mass it increases the strength of the paper as well as its suitability for writing. Besides, the dried slime is water repellant and is responsible for the self-sizing of paper. Paper made from strongly beaten and swollen stock is greaseproof. Schwalbe has investigated with much success the conditions of the formation of slime. He has patented a series of processes by means of which with the addition of acids, acid salts, fibers containing incrusting substances, etc., it is possible to increase the formation of slime and thus by colloidal-chemical means to assist the mechanical disintegration. Thus, for example, the addition of 1 to 3 per cent of the slime-assisting substance "mucigen" suffices for considerable shortening of the beating time.

The ability of alkalies to cause swelling has long been known. This property of the alkalies has been utilized in practice, but without due recognition of the colloidal-chemical nature of the phenomenon. Thus in the manufacture of the well known Swedish kraft paper from sulphate they purposely leave part of the cooking liquors in the stock instead of the usual complete washing. Only afterwards they neutralize the alkali with weak sulphuric acid. Due to the alkalies the beating is made much easier and at the same time the resulting paper is unusually strong. Apparently what takes place is a simultaneous peptization of the rosin and fat constituents of the half-stuff, which improves the quality of the paper.

Schwalbe observed the largest amount of swelling in a 0.1 per cent solution of lactic acid. Cellulose which was immersed in it retained, after separation of the free water by centrifuging, five times as much water as was the original weight of the cellulose, while cellulose swelled in water takes up only 150 per cent of water. Cellulose fibers swell strongly also in weak acetic acid.

As regards the influence of electrolytes dissolved in water, Schwalbe has succeeded in proving that in order to obtain a definite amount of beating, in the presence of even an insignificant amount of salts, more time is required as well as more power. Theoretically this is explained by the fact that the actions have a coagulating effect upon the negatively charged cellulose and thereby create a colloidal-chemical opposition to the mechanical disintegration.

II. Loading, Coloring and Sizing of Paper Stock

So far we have not considered the addition of loading, coloring and sizing materials to the paper stock in the beater.

Loading

The loading materials are: clay, talc, abestine, gypsum, etc. The problem here is, first, to make a thin suspension of the filler and, second, to attach the particles uniformly to the fibers so that they will not be carried off in the white water. This typically colloidal-chemical problem is still far from having been solved in practice, and the losses of filler in the waste waters are still considerable. Although they use in practice such protective colloids as water glass, starch and others, in mixing the fillers, yet the essence of their action and the advantages of their use have been investigated only slightly. The author and O. Seiderer are conducting a systematic study of the colloidal chemistry of loading materials. We hope to be able gradually to establish reliable guides for the rational selection of the various fillers as regards their suitability for the loading of paper stock.

Coloring

In so far as the writer is aware, no one has specifically studied the colloidal-chemical phenomena of the coloring of paper; we have, therefore, also initiated investigations of this field. In general, except for some details, the conditions here are similar to those present during the coloring of cotton yarn.

Sizing

The colloidal chemistry of the sizing process has attracted the attention of investigators earlier and to a greater extent than did the other colloidal-chemical problems of papermaking. In order that paper should not allow ink and other liquids to penetrate, and in order that writing should not spread, the paper is sized by means of water-repelling substances. All of the substances used for the sizing of paper: rosin size, animal size, vegetable size (from flax seed), rubber, albumen, starch, dextrin, viscose, Montan wax, caoutchouc—are typical colloids. In order to obtain a sufficiently large water repelling surface, it is necessary to bring the sizing materials into the colloidally disperse state. All fibers must be covered with a thin scale of the sizing material which must not allow the water to penetrate.

Rosin Sizing

Rosin sizing of paper has been subjected to the greatest amount of experimental investigation from the point of view of colloid chemistry. Rosin soap, made by cooking rosin with soda ash or caustic soda, is diluted with water to a milk and is then added to the paper stuff with which it is mixed and is then precipitated on the fibers by a solution of aluminum sulphate. The fact that aluminum sulphate is most useful here is explained by the trivalence of its cation. As we know, during electrolytic deposition of negatively charged particles, like the dispersed rosin particles of the *sol* of colophony, the extent of deposition increases with increasing charge of the cation. Thus, aluminum sulphate, for example, in one rosin suspension was depositing 150 times more intensely than sodium sulphate, possessing a univalent cation. Anions have a peptizing action upon a rosin suspension. This is made use of during cooking of size with alkali. The hydroxyl ion plays the part of a stabilizer with regard to the dispersed rosin. For this reason it is not necessary to use an equivalent amount of alkali during cooking of size; part of the rosin remains unsaponified and is colloidally distributed on dilution in water, as, so-called, free rosin, protected by sodium abeitate and by hydroxyl ions. The hardening salts of mill water often bring about the undesirable and premature increase in the size of the free rosin particles, before these have been thoroughly mixed with the fibrous mass. The addition of casein, starch, dextrin, gelatine, tannin, etc., has an effect upon the stability and rate of settling of the solutions of rosin size. The least change in procedure often leads to opposite results although the properties of the added materials are the same; thus casein, depending upon the time of its addition to the furnish, may either prevent almost completely electrical coagulation, or else, on the contrary, cause an immediate precipitate. In practice during the preparation of rosin size, one

has heretofore been guided solely by empirical data without any knowledge of the colloidal-chemical laws, which could have proved quite useful.

Aluminum Sulphate

We have already spoken about precipitation with aluminum sulphate. Had we left the dispersed rosin of colloidal magnitude, then the greatest part of the rosin would have been lost in the white water. It would have also been impossible then to unite the rosin particles into continuous films which must be formed on the drying cylinders. The importance of precipitating with aluminum sulphate lies not only in the fact that the high charge of the aluminum ions is introduced thereby, but also in the introduction of sulphuric acid liberated from the salt, which neutralizes the alkali and thus removes the peptizer, with the result that the stability of the rosin size is decreased. However, due to this neutralization, the hydrolysis of aluminum sulphate is carried further in accordance with the mass action law, until all aluminum ions change to the colloidal hydrate of aluminum oxide.

Alum Substitutes

Is the hydrate of aluminum oxide only a filler which could be replaced by some other mineral substance, or is it of prime importance in the sizing process? Experiments have shown that other precipitating agents, for example, magnesium sulphate, sodium acid sulphate, also weak sulphuric acid (which on account of their high precipitating value and cheapness could, it would seem, successfully replace aluminum sulphate) do not give to paper sufficiently durable sizing and the paper after some time becomes "unsized" again. This phenomenon could hardly be explained by purely chemical theory, which presupposes the formation of aluminum resinate and ascribes to it ability to size. Aluminum resinate cannot be formed in the beater to any great extent; it could only be formed by the reaction between the aluminum ion and the anion of rosin acid; but this reaction is almost entirely non-existent, and instead there is formed colloidal rosin acid, partly as free rosin and partly as rosin saponified by hydrolysis.

Here we again encounter colloidal-chemical fundamentals, which necessitate the use of the hydrate of aluminum oxide. On one hand, the particles of hydrated aluminum oxide impede the formation of large agglomerates of rosin, thus helping the precipitation of the rosin over the entire fibrous mass; on the other hand, the particles of hydrated aluminum oxide have a colloidal electrical effect: the hydrate of aluminum oxide is electrically positive, cellulose and rosin are electrically negative; therefore these latter would repel each other, were it not for the isoelectric condition of the entire system, thanks to the positive electrical equivalent of the hydrate of alumina. This is the explanation from the colloidal-chemical viewpoint not only for the necessity of using alum in paper sizing, but also for the fact that sizing is not permanent when aluminum salts are not used; for in such paper when kept for any length of time, there takes place an electrical repulsion of the equally negatively charged rosin and cellulose particles resulting in ruptures of the rosin crust through which ink penetrates.

Use of Rosin Alone

It is necessary for me here to report briefly on several experiments with mechanical sizing with rosin, by means of colloid mills. I have conducted experiments both with the Plauson mill and with the new continuously acting Osterman colloid mill. The latter reminds one of a ball mill with a very high peripheral speed. There was no need for cooking the size; the cellulose and large lumps of rosin were ground together with the addition of small quantities of chemical substances. The brittle rosin was ground to a colloidal condition and was closely incorporated with the cellulose fibers, which, being elastic, were not subjected to "dead grinding" thereby. In order to establish electrostatic equilibrium after grinding we added aluminum sulphate.

At present we do not possess the necessary means for the continuation of the experiments and for their conduction on a large scale. However, even the preliminary experiments mentioned above of paper sizing by mechanical processes (which are patented) are worthy of note, although this colloidal problem is far from a final solution from the viewpoint of the technic and economics of the paper industry.

In conclusion I express the hope that we colloid chemists will in the future be of use to the papermaker in many ways. Already the prominent investigators among the paper technologists are compelled more and more to reject their purely chemical outlook and adopt the viewpoint of colloidal chemistry.

Special Inquiry No. 81

Rubber Couch Rolls for Wet Machines

1. What experience have you had with rubber couch rolls on single or double press wet machines?
2. Is there any saving in felts with the rubber couch?
3. Does the saving in felts warrant the investment in rubber covering and higher cost of roll core as compared with the felt couch roll so generally used?
4. What is the proper density (plastometer test) for this kind of rubber roll?
5. Should the roll be crowned or ground straight?
6. Does the rubber roll cause greater wear of the cylinder face than the felt covered roll?

Rubber Press Rolls for Wet Machines

1. What has been your experience with rubber covered press rolls in single or double press wet machines?
2. Is there any saving in felts?
3. Can the pulp be pressed drier with rubber rolls than with the regular rolls without greater injury to the felts?
4. What density of rubber (Plastometer test) has been found best?
5. Do you recommend the top roll or the bottom roll or both be rubber covered?
6. Should the rubber rolls be crowned or ground straight?
7. What kind of stock?

Responses to these questions will be compiled in a special report which will be sent to all who contribute information. Send replies to

W. M. McNaughton, Secretary, TAPPI,
19 East 41st street, New York.

Fenimore Mill to Shut Down

[FROM OUR REGULAR CORRESPONDENT]

Hudson Falls, N. Y., September 19, 1927.—The sulphite mill of the Union Bag and Paper Company at Fenimore will be shut down permanently not later than the first of the year, it was announced here by George S. Witham, Jr., superintendent. The closing of the plant will throw out of employment one hundred men. Mr. Witham stated that the company can buy sulphite and have it shipped to the Hudson Falls plant cheaper than it can be made here. He said that a saving of $20 a ton will be made by shipping the sulphite here instead of manufacturing. Just what plans are being made for utilizing the sulphite mill after the first of the year were not made known.

At the same time that announcement was made of the discontinuance of the local sulphite mill, it was learned that the Union Bag and Paper Corporation, through a newly formed subsidiary, has acquired a water frontage in the state of Washington at Tacoma, where $2,000,000 is to be expended in the construction of a new kraft pulp mill. Financing for the new venture has been arranged through a group of New York bankers.

The announced curtailment of manufacturing at Hudson Falls is looked upon by some as being influenced by the earlier decision to develop the Hudson Falls site for power purposes. Known plans of the company call for the erection of a $3,000,000 hydro-electric plant at Fenimore, possibly during the next year.

The Chemistry of Sulphite Cooking

W. H. Birchard, The Scutan Co., Brooklyn, N. Y.

This title may be slightly misleading as very little is known about the chemistry of sulphite cooking. The art of cooking has progressed far ahead of the science, principally because the action which takes place within the digester is subject to so many variables, not the least of which is the necessary raw material, the wood itself. The same species of tree obtained from different parts of the country or from different countries varies greatly as to quality of pulp obtained as well as the yield. Logs even from the same tree, will cook differently accordingly to the treatment they receive before cooking, whether they are wet or dry, and according to the length of time they have been in the water and how long they have been seasoned. Chips from green logs, when cooked, yield a pulp, which although high in resin, gives less trouble on the dry machine than from logs that have been seasoned in the pile for three months, and logs seasoned more than a year give the least pitch troubles. Of course the pitch troubles are accentuated by lime crystals in the pulp about which more will be said later.

These are minor variables but if they are neglected they lead to trouble. They must also be considered when trying to understand the chemistry of the cooking operation.

Most of the current researches on sulphite cooking deal principally with the organic-chemical side of the process, but the author believes that much may be learned by studying the physical-chemical side as well as the mechanics of the reaction. It would be extremely interesting to know just what reaction goes on during the cooking. We know that the primary purpose of all chemical pulping processes is to soften and remove the encrusting material and recover the cellulose in varying states of purity depending on the use to which the pulp is to be put. The reaction that goes on in this dissolving process is very uncertain since our knowledge of lignin and cellulose, the two major components of wood, is far from complete. Several formulas have been proposed for lignin, but there is no reason to believe that the lignin as removed by the drastic action of strong acids or hydrolysing agent on wood is of the same structure or composition as that originally existing in the wood. It is not the object of this paper to discuss the various formulas proposed by the different workers but it seems quite conclusively proven that a ligno-sulphonic acid is formed containing two (HSO_3) groups. This reaction is important and will be discussed more fully.

Failing in our desire to know the chemical reaction that goes on we still may investigate the mechanism whereby the reaction takes place and the optimum conditions under which the reactions proceed. Knowing these we are in a better position to cook more efficiently.

Three Factors of Importance

The three factors which the author considers the most important in sulphite cooking are the condition of the chips, the temperature cycle and composition of the cooking acid. If these three factors are analysed carefully some very interesting information will brought to light.

The author, while conducting some cooking experiments with glass digesters made some interesting observations. These digesters were developed at the Canadian Forest Products Laboratories, Montreal, and consisted of a glass barrel of 540 cc. capacity, set in a bronze, flanged collar. The cover consisted of a bronze plate capable of being bolted onto the collar. Into the head were tapped two relief pipes, a pressure outlet and an opening through which a thermometer extended into the digester. In this way it was possible to maintain an accurate temperature reading within the digester. The barrel was immersed in an oil bath with an electric heating element in the bottom. This permitted very accurate temperature control, and using alba oil in the oil bath it was possible to watch the contents of the digester during the whole of the cooking cycle.

Circulation Observed

The circulation within the digester has always been a popular topic for discussion. Some operators maintain that the whole mass within the digester turns while others maintain that only the liquor circulates. The conditions in these glass digesters although probably not identical with those in digesters of plant size are still similar since the same ratio of acid to chips was used as in industry. It was observed that convection currents that were set up, keep up a considerable circulation and when gas is relieved from the top of the digester an ebullition of gas takes place which circulates the liquor quite violently. At no time was the liquor a darker color at the bottom than at the top of the digester or vice versa. Owing to the height of a commercial digester, 50 feet or more, and the fact that it is heated from the bottom it is natural that the temperature curve for the bottom of the digester is higher than that for the top and the circulation will not be quite as efficient as in the experimental digester but it seems reasonable to assume that this difference in temperature will aid circulation.

Moisture Content of the Chips

The condition of the chips is probably a more important factor than is generally thought. The moisture content of the chips has an appreciable effect on the yield and quality of the pulp and also on the strength of the acid to be used. This point will be discussed more fully later. The length of seasoning of the wood before using as stated above has also an important effect on the condition of the pulp obtained. Pulp wood used from the pile within about three months does not appear to give much pitch trouble although the pulp obtained may be high in pitch. Between three and nine months of seasoning renders the resin more difficult to extract and leads to trouble on the drying machine. After a year's seasoning the resin seems to be oxidized to a point where it gives least trouble in extracting and the pulp obtained is low in resin.

Penetration of the Chips

The Wood Preservation Division of the Canadian Forest Products Laboratories, Montreal, observed in their work on impregnating ties with preserving solutions that the penetration from the ends is about nine time as fast as the penetration from the sides. The author's observation on the rate of penetration in the digester coincides with this. The progress of the penetration during the cook can be quite clearly observed in the glass digester. The ends is about nine times as fast as the penetration from the sides. This is only natural as the penetration is capillary and penetrates by the same route as the sap passes up the tree.

This penetration factor is not sufficiently stressed in the mills. Controversies have arisen as to the best size of chips to use. Some operators favor half-inch chips while others favor one and a quarter inch chips. Any size of chip is best, if such a seemingly contradictory statement may be pardoned, providing the cooking conditions are altered to suit the chips being used. It seems reasonable that a one and a quarter inch chip should not be used for a short 8 or 9 hour cook since the time allowed for penetration is not sufficient for a chip of that length. However such a chip might readily be used for a Mitscherlich cook where the period of penetration is greatly extended. The rate of penetration of all chips in a digester is approximately the same and therefore the more uniform the chips the more uniform will be the product. The author remembers one sulphite mill which he visited

where one whole room was stored with pulp full of shives, and the quantity was being added to daily. The pulp was useless for the regular products which was fine paper. Although this loss was considered a necessary evil, an examination of the chips being used showed an abnormally high percentage of long slivers in the chips. These slivers were only softened and not being fully cooked in the process produced shives in the stock. Chips of different lengths need different periods of time for penetration and hence the temperature curve and cooking cycle must be altered to suit the chips being cooked.

The importance of penetration is recognized by some operators and various modifications of existing pulping processes are proposed, from presteaming of the chips to pretreatment with caustic in order to shorten the time needed for penetration. Some pretreatments have been successful, while others, notably the pretreatment with caustic soda tends to block the capillaries and prevent penetration.

The moisture content of the chips is also of importance. In estimating the strength of the cooking liquor necessary, investigators generally determine the amount of moisture in the chips and assume that the acid is dilute by that amount. The author believes that the dilution due to moisture in the chips is probably greater than the calculated amount. In moist chips the capillaries already contain water. Only sufficient acid can penetrate the chip to saturate it and therefore only a fraction of the acid is diluted causing as will be seen an abnormal dilution. It is true that if the moist chips are left in contact with the acid long enough an equilibrium will be reached where the liquid phase of the saturated chips contains approximately the same acid and sulphite content as the surrounding acid. In mill practice however the chips are seldom left in contact with the acid long enough for the chips and acid to reach an equilibrium, before the cooking action starts. In the dry chips the acid in the capillaries is stronger than in the moist chips and therefore the action will be more severe.

It has been shown by Miller and Swanson that the acid penetrates the chips at a faster rate than the base. This must be taken into consideration when deciding the cooking cycle to be used. Nearly every mill has its own temperature curve for cooking and follows this curve religiously. The cooking curve is usually one which has been found to give pulp that can be used even though it may be giving a higher percentage of screenings than is necessary. Where chips are of uniform size there should be a very small percentage of screenings indeed.

It is very fortunate that cellulose is very resistant to strong alkalis and weak acids while lignin as existing in the plant is soluble in alkali and quite readily sulphonated. These properties are generally kept in mind in operating the various pulping processes but in the sulphite process it is sometimes overlooked. If we remember that the acid penetrates by capillary action and the acid penetrates at a faster rate than the base we are in a better position to understand the mechanism of penetration. If insufficient time is allowed for penetration before temperature is raised above 100 degrees C. or the temperature at which the chemical action sets in then we have only the acid part of the liquor in contact with the cellulose. Lignin has aldehydic properties and with only one (HSO_3) group added on will still exhibit these aldehydic properties. Aldehydes in the presence of alkalis or at high temperatures will polymerise to form insoluble resins. This will be the condition if the temperature is raised too rapidly. The partly sulphonated lignin still exhibiting aldehydic properties is polymerised by the high temperature to insoluble resins which block the capillaries, thereby preventing further penetration by the acid.

Ligno Sulphonic Acid

The author finds no evidence that ligno-sulphonic acid polymerises under the conditions existing in the sulphite cook.

It will be noted that a consideration of the acid composition used is omitted but this will be more fully dealt with later. It is of the greatest importance to have a sufficient supply of (HSO_3) molecules in contact with the lignin at all times to complete its sulphonation to ligno-sulphonic acid before it polymerises. The (HSO_3) penetration must not be too far in advance of the base or the cellulose will suffer as ligno-sulphonic acid is almost as strong an acid as sulphuric acid. Therefore this acid must be neutralised as fast as it is formed.

The maximum temperature is also very important. Here again each mill has its own maximum ending temperature. The author has found that it is not advisable at any time to go much above 145 degrees C., in fact the lower the maximum temperature the better it is. Some mills use a maximum ending temperature of over 150 degrees C. but the author believes this to be unnecessary and also detrimental to cellulose, since it begins to decompose at 150 degrees and as most operators know it is difficult to prevent a cook from burning at this temperature. Around 140 degrees and above an interesting reaction sets in which will be discussed fully under acid composition and to carry the temperature above 145 degrees C. is only a waste of steam without a corresponding improvement in the stock obtained. The maximum ending temperature may, of course, be varied within comparatively wide limits according to the quality of pulp desired, but the strongest pulps are cooked at the lowest temperatures and blown at the highest pressures. The reason for this will be seen later.

Previous writers all seem to agree that the only effect the base has in digestion is to neutralise the acids that are formed and thus prevent the charge from burning, with the result that a dark weak pulp is obtained. The observation of the author leads him to believe that the base performs an additional function which is also very important and that is hydration and hydrolysis. This, at first glance, may appear contradictory, to say that an alkaline hydrolysis takes place in an acid cook, but a further investigation will show that this is not such an impossibility.

Function of the Base

Miller and Swanson[1] speak of "localising of the base," which is an indefinite phrase to account for an unexplainable disappearance of the base. Many investigators have recorded the fact that when the stock is cooked in the digester, blown to the pits and not washed, crystals of calcium monosulphite are found precipitated on the fibers. This has led to the conclusion that the monosulphite was precipitated on the fibers as such which the author is inclined to believe is not entirely the case.

Unfortunately very little work has been done on the physical properties of the acid, a knowledge of which is of prime importance in studying the reactions in the digester. This fact is surprising since so much has been done on the purely chemical side of the reaction. Conclusions are drawn concerning the reactions that take place without taking into account the physical character of the acid being used. All the published observations have been those made under conditions altogether dissimilar to those existing in the digester, as the analysis of liquors and precipitatives have been made in the cold and conclusions have been drawn therefrom.

While operating the glass digesters the author observed that the liquor gradually became cloudy and at a definite temperature and pressure a precipitate settled out and the liquor cleared up again. This always occurred at the same point in the cook, all other conditions remaining constant. This observation led the author to do a few experiments on the raw acid.

The digester was filled with acid of the following composition;—

Total SO_2 5.25%
Free SO_2 3.84%
Comb. SO_2 1.31%

The combined SO_2 was purposely kept high. Two runs were made and in both cases a crystalline precipitate began to form at 128° C. and between 70 and 75 pounds pressure. No relief of

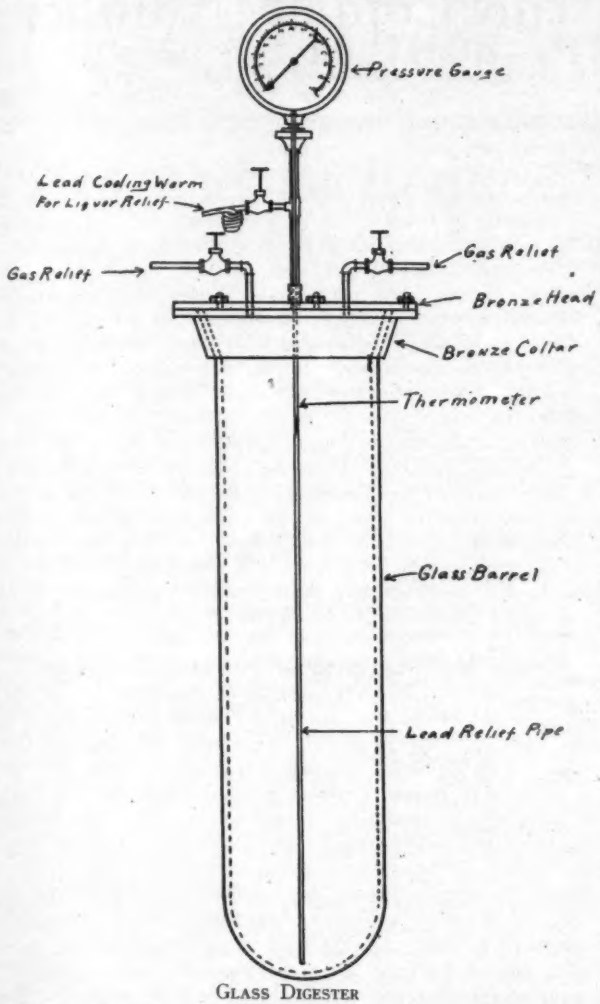
[1] "Chemistry of Sulphite Cooking," Paper Trade Journal, March 1 and 8, 1923.

gas was made and the pressure run up to 80 pounds, which was considered the maximum safe pressure for the glass digesters. The digester was cooled, the liquor filtered off and the precipitate air dried. The analysis of the precipitate gave:—

CaO 43.32%
SO_2 48.98%

The theoretical amount of CaO required for 48.98 per cent of SO_2 is 42.85%. This shows the excess of lime, probably combined as sulphate, to be 0.47% or almost a negligible quantity. It will be noted that in these experiments the liquor was cooled in contact with the precipitate.

These results are quite in keeping with the finding of neutral



GLASS DIGESTER

sulphite on the fibers after the cook but on writing out the graphic equations for the reaction, other possibilities present themselves which hitherto escaped observation.

$$Ca(HSO_3)_2 \rightleftarrows CaSO_3 + H_2SO_3$$

The $CaSO_3$ with the water gives us the following reactions:—

$$CaSO_3 \rightleftarrows Ca^{++} + SO_3^=$$
$$2H_2O \rightleftarrows 2OH^- + 2H^+$$
$$Ca(OH)_2 \quad H_2SO_3$$
$$\rightleftarrows \quad \rightleftarrows$$

On examination of this reaction picture it will be found that it should be possible to have the calcium hydroxide precipitated since the solubility curve of $Ca(OH)_2$ is a down curve, being less soluble in hot water than in cold, and the solubility curve of $CaSO_3$ is an up curve, being slightly more soluble in hot than in cold water.

[2] Zeitschrift fur Anorganische Chemie 128 (1923).
[3] Unpublished work by W. B. Campbell, Canadian Forest Products Laboratory, Montreal, Canada.

In order to find out if the calcium hydroxide actually was precipated two more runs were made and after a temperature of 137° C. and 80 pounds pressure was reached the supernatant liquid was drawn off as rapidly as possible. the digester was allowed to cool until it could be handled, the precipitate was air dried and analysed as in the first two runs.

The result was as follows:—

	1	2
CaO	41.74%	30.74%
SO_2	35.91%	22.36%
Theoretical amount of SO_2	47.70%	35.10%

As will be seen from these figures it is quite evident that calcium hydroxide is precipitated as such and the only reason why a higher hydroxide content was not obtained is that the SO_2 gas was not expelled from the digester with the liquid and hence permitted the action to reverse as it does on cooling. (Using the glass digesters care must be taken not to cool too rapidly, lest the glass crack). Some may argue that part of the lime may be present as the sulphate. That is true but the amount of sulphate present is almost negligible as is shown in the first runs. Forester[2] shows that the sulphate formed at these temperatures and length of time is negligible unless a catalyst is present.

Further light has been thrown on this by W. B. Campbell[3] which permits an explanation of this phenomenon. Above 120° C. experiments indicate that H_2SO_3 is practically nonexistent. If we now return to our graphic formula we have an explanation for the precipitation of the hydroxide at around 128°C. As fast as the H_2SO_3 is formed it is destroyed, since H_2SO_3 does not exist at this temperature. This will cause more of the normal sulphite to dissociate and hence more of the hydroxide will be formed. Since the hydroxide is less soluble in hot than in cold water the liquor soon reaches a saturation point and the hydroxide is precipitated. As soon as the stress, temperature and pressure, is removed the reaction becomes reversible and the hydroxide becomes the normal calcium sulphite again which is found in the liquor and on the chips at the end of cook.

With the lime precipitated as hydroxide on the fibers and the sulphurous acid incapable of existence at the end of the cook, we have a condition suitable for a hydrolysis such as Miller and Swanson observed which continues after sulphonation ceases, but instead of having an acid hydrolysis we would have an alkaline hydrolysis. It is true that lime is not very soluble at the temperatures existing at the end of the cook but what is dissolved is about 99 per cent ionised so it is fairly active. This probably explains why an easy bleaching pure cellulose is obtained when using a cooking liquor high in base.

The b-cellulose and other carbohydrates which go to reduce the α-cellulose content of the pulp are insoluble in weak acids, but are soluble in alkali solutions. The reduced H-ion condition at the end of the cook is suitable for the solution of these carbohydrates and thus the percentage of α-cellulose in the pulp is increased.

It will be seen from the preceding that when a sulphite acid is used, high in base, care must be taken that penetration is complete before the temperature where the reaction sets in has been reached. As has been shown, if the temperature is raised too rapidly the capillaries become blocked. In addition to this the base will be thrown out of solution before it has an opportunity to fulfil its primary object, that of neutralizing the acids formed during the cook. When this condition exists there is a possibility of burning the cook even though enough base was present in the original solution.

Professor Klason has stated that 90 pounds of CaO is needed per ton of pulp. In practice this amount must be exceeded as the base used is not 100 per cent efficient. The author has found that it is possible to obtain a good fiber with an acid containing as low as 0.95 per cent combined SO_2 using an acid-to-chip ratio of 5 to 1, but below this the stock was weaker and darker in color. On the other hand using an acid high in base, an easy bleaching stock was obtained which after beating for thirty minutes gave a parchment

like sheet which could not be tested with an Ashcroft tester. This stock showed unmistakable signs of hydrolysis and hydration.

Much of the data on which these observations were made was obtained in connection with an extended investigation of the manufacture of sulphite pulp being carried out under the co-operative agreement between Canadian Pulp and Paper Association, McGill University and the Forest Products Laboratories of Canada. The writer wishes to acknowledge the facilities placed at his disposal by these contributing parties.

His conclusions are personal and not to be interpreted as representing those of the co-operative research organization.

It is shown that penetration is a very important factor in sulphite cooking and care must be taken not to raise the cooking temperature too rapidly lest the capillaries become blocked by the aldehyde resins formed.

The precipitation on the fibres is shown to be principally the hydroxide of the base and thus the probability of an alkaline hydrolysis continuing after the sulphonation has been completed.

The Determination of the Copper Number*

By Dr. D. Clibbens and Dr. A. Geake, Shirley Institute, Manchester, England.

In an address on the different methods for the determination of the copper number, given Feb. 23, 1927, by Dr. Carl G. Schwalbe,[1] a request was made for the cooperation of technical men in this field.

The two methods for the determination of the copper number, which Schwalbe rightly claims are the most suitable, are known by the names Schwalbe-Haegglund and Schwalbe-Braidy. The fundamental work of Professor Schwalbe in this field represents one of the greatest advancements which has been made up to this time in testing methods for the pulp industry. For this reason we would like to propose that, in recognition of this valuable service, the name Schwalbe be prefixed in the future to every copper number method and that, for instance, the terms Schwalbe-Haegglund and Schwalbe-Braidy become universal in the technical literature.

The method which has been carefully investigated by us[2] will hereafter be designated in publications of our laboratory as the Schwalbe-Braidy determination.

We should like to state further that we and our coworkers are very much interested in the requirements of the textile industry. For this industry we have shown that the method of Schwalbe-Braidy is far superior to that of Schwalbe-Haegglund. In control tests carried out in the textile industry copper numbers above 4 appear relatively seldom because in practice such a far-reaching degradation of the cellulose is hardly possible.

In the range of low copper numbers the advantages of the Schwalbe-Braidy method are very great, a fact which not only we have demonstrated but which can be asserted on the basis of many thousands of tests that have not been published.

As Schwalbe, himself, has stated, the method of Schwalbe-Braidy may prove unsuitable without modification for the measurement of higher copper numbers and the investigation of wood pulps. Here the procedure according to Schwalbe-Haegglund is superior. Furthermore it appears that the copper number is dependent upon the physical or mechanical structure and shape of the cellulose, consequently it is questionable whether the use of a uniform method for cotton and wood cellulose is at all proper. Such a test might always remain methodical without possessing theoretical or comparative value.

Finally, allow us to refer to the fact that no evidence has been given that the swelling of cotton cellulose exercises any influence at all upon its quantitative absorption of methylene blue. We have shown on various occasions[3] that mercerized cotton—the typical representative of swollen cellulose—gives no increased absorption of methylene blue in comparison to cellulose which has not been mercerized.

If, on the other hand, cotton is dried after treatment with dilute sulpfuric or phosphoric acids, the methylene blue absorption is of course increased. This behavior, however, is connected not with the swelling of the cellulose but with the fixing of the acid.[4]

Cottons of different origin possess markedly different methylene blue absorptions. This phenomenon is more likely traceable to the purely chemical differences and not to the difference in the degree of swelling. The absorption of water, which is regarded in the physico-chemical sense as the most exact measurement of swelling, produces no important variation with grades of cotton of different origin.[5]

Of what value is the comparison of the methylene blue test with the copper number determination in the textile field? Exhaustive research has established that both measurements are absolutely necessary when oxidation conditions are not known.[6] Oxidation of cotton leads to oxycellulose which is characterized by low methylene blue absorption and high copper numbers and also by high methylene blue absorption and low copper numbers, according to the pH of the bleach liquor.

* Papierfabr., 25, 401 (June 26, 1927). Translated by John L. Parsons, Member TAPPI Cellulose Committee.
[1] Papierfabr., 25, 157-160 (Mar. 13, 1927); Paper Trade J., 84, TAPPI Section, 326-328 (June 16, 1927).
[2] Clibbens and Geake, J. Textile Institute, 15, T27 (1924).
[3] Birtwell, Clibbens and Ridge, J. Textile Institute, 14, T297 (1923); Clibbens and Geake, J. Textile Institut, 17, T127 (1926).
[4] Birtwell, Clibbens and Geake, J. Textile Institute, 17, T145 (1926).
[5] Urquhart and Williams, J. Textile Institute, 17, T38 (1926).
[6] Birtwell, Clibbens and Ridge, J. Textile Institute, 16, T13 (1925).

Paper Men Suggested for Standards Committee

Upon request from "A Committee on Standards for Graphic Presentation" of the American Society of Mechanical Engineers, the American Paper and Pulp Association has suggested the names of the following men who are concerned with statistical work for their respective companies or for the industry to serve in an advisory capacity in the particular problem of charting statistics: M. C. Dobrow, Writing Paper Manufacturers Association, New York; Grafton Whiting, Paperboard Industries Association, Chicago, Ill.; Stanley Byron, Hammermill Paper Company, Erie, Pa., and Paul S. Hanway, American Paper and Pulp Association, New York.

The request from the Society of Mechanical Engineers comes to the association as the result of the very thorough work which the association is doing in the development of statistics for the paper industry.

Theory and Practice of Steam Cylinder Lubrication

In *Lubrication*, the technical publication of Texas Company, August, 1927, number, is given a very informative article on the lubrication of steam cylinders, discussing the problem from the standpoint of steam pressure and temperature, valve design and types of lubricants to use, as well as describing the method of application.

In the conclusion it is stated that under operation the efficiency of lubrication can be roughly judged by:

1. The film of oil on the piston rod.
2. The amount of oil in the condensate.
3. The action of the valves.

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The Way to Reduce the Cost of Accidents*

By L. P. Alford, Vice-Chairman, Comm. on Safety and Production of the American Engineering Council

"There has been, during the last few years, a striking development in the industrial accident field, namely, a definite and known increase in the number and severity of accidents." The alarming situation indicated by this statement has arisen after 16 years of the safety-first movement and the expenditure of millions in accident prevention. This statement was made by A. W. Whitney, acting general manager of the National Bureau of Casualty and Surety Underwriters, and is based on a study of insurance and state experience.

His conclusion comes with a peculiarly vicious jolt on the heels of a disclosure of facts that show an amazing increase in industrial productivity. Placed in contrast, during the past decade, there has been an increase in the efficiency of production of such a magnitude as to be called a second industrial revolution, and an accompanying decrease in the accident cost assessed against each unit of product. But at the same time, the hazard per man-hour has increased for every industrial worker. It is this latter development which is a cause of serious disquiet.

Appreciating this situation and its bearing upon the operation of industry some two years ago, the National Bureau of Casualty and Surety Underwriters decided to initiate a careful and dispassionate investigation on a national scale. The work was entrusted to a special committee of the American Engineering Council, which, after more than a year of study, and the expenditure of upwards of $25,000 has completed its work and rendered its report of which this article is a summary. The purpose was to discover if possible a method of attack upon the costly drain on American manufacturing due to industrial accidents which, if the statement with which this article opens is accepted as true, is increasing instead of lessening.

The total direct cost of accidents in American industry was computed by Sydney J. Williams in 1919 at $1,014,000,000. Carl Hookstadt calculated this same figure for the year 1923 at $1,022,264,866 in wages alone. The National Safety Council estimated the actual industrial deaths in 1926 at 24,000 and the number of industrial accidents causing loss of time beyond the day of injury at 3,000,000. It is not likely that these statistics are entirely reliable because of the difficulty of computation. However, it is beyond any question of dispute, that the total loss is a huge drain upon the resources of American industry and one that deserves most thoughtful consideration in any attempt to eliminate or minimize.

During the last decade the increase in efficiency and production has startled everyone who has taken the trouble to consider the significance of the figures. The reasons for this productivity increase are usually stated as four in number and in them may be found a suggestion as to a cause for the unfavorable trend in accidents. These constructive factors are:

1—Development of industrial organization and management.

2—Standardization of products and processes permitting mass output.

3—Development of labor-saving and time-saving machinery, much of it automatic in action.

4—Development of a proper understanding between labor and management.

Of these factors the increase in the use of machinery undoubtedly has had an unfavorable effect upon the accident situation. Mr. Whitney explains the three phases of the process that has taken place in this manner:

"1—The introduction of machinery has in many cases displaced handwork that was comparatively safe. Even though the change may have resulted in accomplishing the work in question with less sacrifice of life and limb, the hazard per worker because of the greatly decreased number of workers will in general be greater. Not only is the number of machine accidents per worker greater but the severity is greater than under non-mechanized conditions.

"2—The introduction of automatic machinery has in general had the effect of displacing operators that were working under standardized conditions at machines that could be thoroughly guarded. The man-power that is needed on automatic machinery, on the other hand, is largely for repair work. Such work is intrinsically dangerous and is scarcely capable of being standardized.

"3—Under mechanized conditions the speed with which material goes through the processes of manufacture is increased and the exposure to accident, other things being equal, is proportionately greater."

Isolated records of accidents and production experience indicated that there is a positive relationship between safety in the factory and efficiency of production. The primary function of the factory is to produce and to produce efficiently, and it is probable that any other important objective of industry found associated with the problem of production will likewise be efficiently handled. As an example, the factory which has a management that works for and secures high efficiency of production will, of necessity, through the same dynamic management forces achieve a high record of safety, if the effort is made.

* From Manufacturing Industries.

The Relation Between Efficiency and Safety

This belief establishes the major thesis around which the investigation centered, namely: the safe factory in general is the efficient factory; the efficient factory in turn is the safe factory.

As the study progressed, two accompanying questions which at first were considered corollary to the major issue began to assume more and more practical importance:

1—Can accidents be controlled under modern industrial conditions, or is an increasing hazard inevitable?

2—Should safety be made a major executive objective?

The importance of this issue does not need either emphasis or elaboration. Mr. Whitney in his introduction to the report quoted from Sydney J. Williams the following succinct statement of the relationship between safety and efficiency:

"Suppose a box falls off a loaded truck and kills a man. For every such case which results in a physical injury there will be perhaps a hundred cases where a box falls off but without injuring anyone. But in every one of these hundred cases either the box will be broken or in any case the truck will have to be stopped and the load repiled. While, therefore, there will be only one case of physical injury, there will be a hundred and one cases of inefficiency. An accident is something gone wrong and it can result only from causes which have their effect over a far wider field than that of the immediate accident itself. The physical injury is only the spectacular evidence of some underlying maladjustment in the same way that a headache is only an alarm bell that calls attention to something that is wrong within."

TABLE 1
ACCIDENT FREQUENCY AND ACCIDENT SEVERITY IN TERMS OF PRODUCTION

From 1920 to 1926—120 Companies Manufacturing Portland Cement. Number of Employees about 3,500.

	1920	1921	1922	1923	1924	1925
Number of accidents, 1,000,000 tons	42.0	35.3	30.6	32.6	27.1	18.5
Days lost per 1,000 tons	7.53	5.60	5.36	4.65	4.76	3.70
Accident frequency rate decrease						49%
Accident severity rate decrease						47%

TABLE 2
ACCIDENT FREQUENCY AND ACCIDENT SEVERITY IN TERMS OF PRODUCTION

From 1921 to 1926—43 Machine Building and Metal-Working Companies. Number of Employees, 60,046.

	1921	1922	1923	1924	1925
Accidents per 10,000 tons	59.5	62.1	63.1	56.8	54.7
Days lost per 10 tons	3.50	2.96	2.57	2.22	2.10
Accident frequency rate decrease					9.6%
Accident severity rate decrease					42.0%

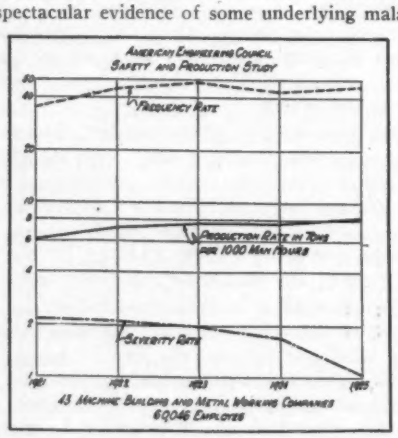
American Engineering Council
Safety and Production Study
Frequency Rate
Production Rate in Tons per 1000 Man Hours
Severity Rate
43 Machine Building and Metal Working Companies
60,046 Employees

FIG. 1
Curves of Production and Accident Rates for Metal Working

The Extent of the Investigation

The nature of the investigation as given in the summary of the committee is:

"The investigation therefore was directed toward the relationships of production and safety. For the degree and excellence of production measures the efficiency of a factory; scientific means for production control are generally applied; production is the major executive objective. Against this known, or ascertainable achievement, the situation in regard to safety can be evaluated. Rates of production, on the one hand, and of accident frequency and accident severity on the other, were made the comparable or contrasting quantities.

"No effort was made, however, to determine the direct casual relationships between the factors which influence accident and production rates. It would have been practically impossible to have done so, because an improvement in productivity may be due to a multiplicity of factors, many of which would also affect the accident rates. In the same way, accident reduction may be, and usually is, the result of many factors, some of which may affect productivity.

"In order to determine the relationship between accidents and production, the committee undertook to gather experience records of a large number of plants and establishments from which accident and production rates could be determined. The requirements of the study were met by collecting five major items of information which were obtained for so long a period as reliable records were available. These were:

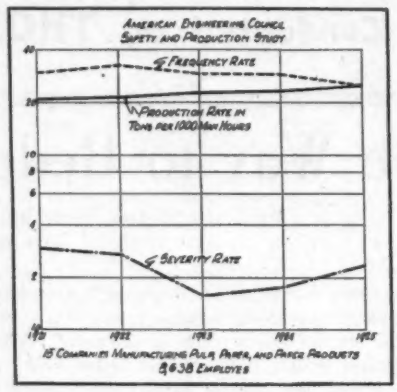
American Engineering Council
Safety and Production Study
Frequency Rate
Production Rate in Tons per 1000 Man Hours
Severity Rate
15 Companies Manufacturing Pulp, Paper, and Paper Products
4,638 Employees

FIG. 2
Curves of Production and Accident Rates for Paper Manufacturing

TABLE 3
ACCIDENT FREQUENCY AND ACCIDENT SEVERITY RATES IN TERMS OF PRODUCTION

From 1921 to 1926—15 Companies Manufacturing Paper, Pulp and Paper Products.

	1921	1922	1923	1924	1925
Accidents per 10,000 tons	14.1	15.3	12.9	12.4	9.69
Days lost per 100 tons	1.39	1.26	0.71	0.77	0.93
Accident frequency rate decrease					29.8%
Accident severity rate decrease					43.5%

1—Average number of employees per year.

2—Number of man-hours worked per year.

3—Annual production.

4—Number of lost-time accidents per year.

"From this statistical data, accident and production rates were computed by using the quantity of production, the number of accidents, and the number of days lost in each case as reported, as the numerator for rates of production, accident frequency and accident severity, respectively. Man-hours worked were used as the common denominator for each rate in order that the rates would be comparable. If the number of man-hours worked was not given, this item was calculated from the number of employees by using the factor, 3,000 man-hours per year. The three sets of comparable rates were determined for each company, industry, and product group. The industry and product group experiences were obtained by combining the experiences of the individual companies in each group.

Lost-Time Accidents

"The term 'lost-time accidents' means those accidents or occupational diseases arising out of industrial employment and resulting in death, permanent disability, or temporary disability of more than the remainder of the day, shift, or turn within which the injury was incurred. The total number of days lost due to lost-time accidents is the sum of the actual number of days lost due to temporary disabilities, and the days lost due to deaths and permanent disabilities determined by using the standard weighting

table recommended by the International Association of Industrial Accident Boards and Commissions.

"Information of the following extent was secured:

Number of Companies	13,898
Company years	122,028
Employees	2,454,413
Man-years	13,143,569
Man-hours	54,430,707,000

"The data were grouped and analyzed from five points of view: (1) to show the levels of performance with regard to safety and production, and at the same time to indicate the possibilities of improvement; (2) to show the trend of accident frequency and accident severity rates in terms of production; (3) to indicate the net changes in both the accident and production rates for two significant years, 1922 and 1925; (4) to indicate the productive time and value lost as a result of industrial accidents; and (5) to determine the increases or decreases in the rates of production, accident frequency, and accident severity in terms of man-hours."

The summing up of the committee is prepared under three headings: Conclusions, Findings and Recommendations, and is as follows:

"The major conclusions of the report properly deal with the thesis and its two corollaries as presented to the Committee. The Committee therefore declares:

"1—The weight of evidence presented in the following parts of this report establishes the truth of the thesis that 'the safe factory is the efficient factory, and the efficient factory is the safe facory.'

"2—The evidence also proves that the accident situation in any factory can be controlled, and that the accident hazard can be steadily decreased.

"3—The evidence further proves that, that quality and thoroughness or management which secures consistently high efficiency of production as a major objective, will also attain a high safety record as an accompanying major objective.

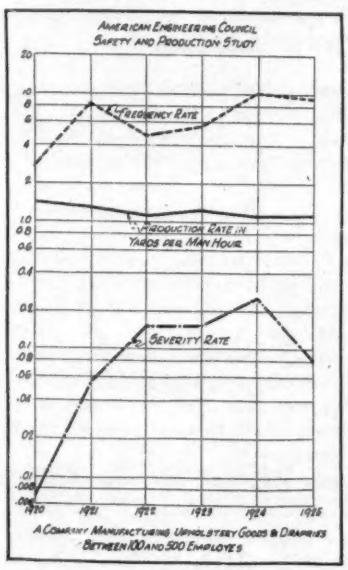
American Engineering Council
Safety and Production Study
Frequency Rate
Production Rate in Yards per Man Hour
Severity Rate
A Company Manufacturing Upholstery Goods & Draperies
Between 100 and 500 Employees

FIG. 3
Curves of Production and Accident Rates for a Textile Plant

Detail Findings

"Thirteen detail findings give important aspects of safety in relation to production and industrial operation:

"1—Maximum productivity is dependent upon the reduction of accidents to an irreducible minimum. There is such a close relationship between safety and production that it is impossible for a plant to have continued increases in productivity unless it reduces at the same time, its accident rates.

"2—The experience of individual companies unquestionably shows that material reduction in accident rates can be simultaneously obtained with increases in production rates.

"3—The rate of production per man-hour for the industrial groups studied, was 14.4 per cent higher in 1925 than in 1922.

"4—The rate of accident frequency per man-hour was 10.4 per cent lower in 1925 than in 1922.

"5—The rate of accident severity per man-hour was 2.5 per cent higher in 1925 than in 1922.

"6—Many industrial executives have not given to accident prevention that degree of attention and direction that its economic and humanitarian significance warrants.

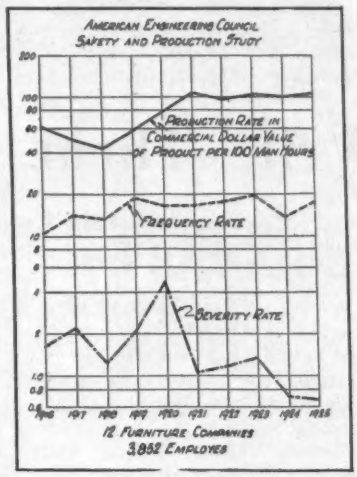
American Engineering Council
Safety and Production Study
Production Rate in Commercial Dollar Value of Product per 100 Man Hours
Frequency Rate
Severity Rate
12 Furniture Companies
3,852 Employes

FIG. 4
Curves of Production and Accident Rates for Furniture Making

"7—Some industrial executives feel, that because of compensation insurance carried their responsibility has been met, hence they do not concern themselves with accident prevention.

"8—The initiation of accident prevention is as much a responsibility of the major executives as is the initiation of improvements in productivity.

"9—The accident and production performance of the best plants in each industry clearly shows that tremendous improvements can be achieved by the remaining plants in each industry.

"10—The incidental or accompanying cost of industrial accidents is a large loss but little realized in the operation of industry.

"11—Minor accidents are accountable for a much larger loss of productive time and value than is generally recognized.

"12—Organized safety work, which is effective in reducing the frequency and severity of accidents, is being carried on only in a relatively small percentage of industrial plants.

"13—A large number of companies keep no accident records and make no attempt to analyze their experience to determine ways and means to decrease accidents.

General Recommendations

"The Committee on Safety and Production recommends:

"1—That the same executive direction and control be given to decreasing industrial accidents as is given to increasing productivity.

"2—That those agencies which collect and disseminate accident statistics adopt uniform terminology and standardize their records so that they may be compiled on a comparable national basis.

"3—That the executive of those plants having high accident frequency and accident severity rates initiate, direct, and control ways and means of lowering such rates to at least the low rates obtained by other plants in their industry.

"4—That industrial trade associations, engineering societies, and other agencies, concerned with the improvement of industrial oper-

ation, bring to the attennon of their members the necessity of improvement in safety performance as a vital step in the strengthening of their industrial position.

"5—That industrial trade associations secure, compile, and analyze accident statistics for the purpose of determining the lowest accident rates possible of attainment for their respective industries.

"6—That industrial trade associations endeavor to secure such action on the part of executives of their industries as will result in each plant having the lowest accident rates obtainable."

The study produced an enormous mass of statistical information which can only be most sketchily outlined here. Not only were the accident frequency and accident severity rates in terms of production computed for individual firms, but also for a number of groups where such combined experience would be informative. Table 1 shows such a combined experience for 120 firms manufacturing Portland cement. It will be noted that a very satisfactory decrease occurred in both the frequency and severity rates. Table 2 gives the same kind of information for 43 machine building and metal-working concerns. A corresponding chart of the rates is given in Fig. 1. Several hundred such charts were plotted in the course of the study.

Table 3 gives the combined record of 15 companies manufacturing paper pulp and paper products. See Fig. 2 for the curves of the rates.

It will be noted that the record of each one of these three groups is satisfactory, that is, both accident rates have shown a substantial decrease in terms of production. But this kind of a record was by no means universal. A number of industries show increases in the accident rates.

This kind of a record is illustrated by Figs. 3 and 4 for a typical textile firm and a representative woodworking group.

Write Them Off, or Collect Them*

(Says the Credit Manager of Sherwin-Williams)

as Reported by Norman Beasley

"The easiest people to sell are the people whose credit has been drained. New retailers, especially, should remember that. Also, it is a very good thing for old retailers to keep in mind."

Walter H. Gorrell, credit manager for the Sherwin-Williams Company, of Cleveland, was discussing the problem of retail credits and their relationship to the entire structure of manufacturing. The Sherwin-Williams concern, which manufactures paints and varnishes and such, carries more than 35,000 monthly balances, deals with more than 100,000 selling contacts, all for one purpose—to make money.

Business Must Make a Profit

If a business cannot make a profit, obviously, it cannot be successful.

"It is a mistake, of course, to think that any business was created for the benefit of the credit department," Mr. Gorrell continued. "But it is a mistake too, to think that a business can succeed without proper attention to credits. Not long ago I read an article in which the author urged that the credit department be eliminated. He went on the theory that if a concern doubled its sales, it could afford to accept greater losses because of the increased profits. Not only was he loose in his thinking but he did not consider the facts.

"One fact that he overlooked is mighty important. It is impossible for every concern to double its sales! It is impossible because there is only so much business—and there isn't any more. If one concern doubles its sales, it is reasonable to think there have been consequent losses in other directions. With other concerns, I mean. Then, too, the idea of going into business and acknowledging, beforehand, that there are going to be credit losses, is wrong. The weakness in that thought is that it tends to make credits a gamble.

"It just isn't sound business to extend credit if you feel, when extending it, that you are taking a chance. A business man, before giving credit, ought to be certain in his own mind, that he is going to be paid. It is well for him to realize that he is going to sustain some losses; but there is no good reason why he should sell goods with that thought in mind. By safeguarding himself, beforehand, he can cut his losses to a minimum and protect his own profits and his own business.

Bad Credits Restrict Business

"Bad credits swell losses, but more important than that, they restrict business. When a concern sends a monthly statement, the little document represents a bill that is expected to be paid. It is a debt. It ought to be paid, quickly. Our experience with hundreds of thousands of bills proves this:

"One—When a statement, sixty days past due, remains unpaid, the chances for a collection are very good.

"Two—When a statement, ninety days past due, remains unpaid, the chances for collection run about ninety per cent.

"Three—When a statement, one hundred and twenty days past due, remains unpaid, chances for collection are about eighty per cent.

"Four—When a statement, six months past due, remains unpaid the chances for collection are about fifty per cent.

"Here, I think, is a proper procedure with monthly statements:

"One—Thirty days past due, consider in active stage of collection.

"Two—Sixty days past due, increase the pressure and change the tone.

"Three—Ninety days past due, consider carefully the prospects for collection and apply pressure accordingly.

"To be successful, business must be permanent. There are a lot of enterprises that are in trouble now and don't know it. They don't know it because they don't give proper proportion to the facts. Either the owners are unwilling to see the facts accurately, or, they aren't informed. Too many merchants are afraid of their customers, afraid to apply pressure for the collection of debts properly contracted.

What May Happen on Past-Due Bills

"Let us consider what is likely to happen on past-due bills. John Smith is a clothing merchant. His customer, John Brown, runs up a bill of two hundred dollars. The following month Brown finds himself a little pinched for ready cash and he lets the account run into the second month. Then comes another money-pinch, and the debt goes over to the third month. Brown needs something else in the clothing line. Does he patronize Smith? He does not. He goes to another clothier, opens another account, or pays cash for what he needs.

"Smith is still waiting for his money and, in addition, he has lost business on which he would have made a profit. Bad credits restrict business.

"No one ever thinks of going to a public utilities corporation and saying:

"'I can't pay my electric light bill this month because I am short of cash. I'll just pay it next month.'

'Everybody knows that it is the rule of a public service cor-

* From Business.

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poration to collect in full every month. Yet, does anyone think the less of the electric lighting company, the gas company or the telephone company for the enforcement of this rule?

"Customers are human beings and they will always stretch their credit where it is easiest to stretch. The customer knows, through experience, just how far he can stretch his credit with each concern.

"The remedy for his own credit difficulties is in the hands of the business man himself—not in the hands of his customers. The merchant ought to set up his rules and make them inflexible—considering, of course, the entire picture and all the circumstances.

A Personal Experience

"Which brings to mind one of our own experiences. Not long ago, in the routine of things, we began suit against a man who was a silent partner in a store. Being a partner he was responsible for the bills contracted; and when our bill remained unpaid for a reasonable length of time, the matter was given to an attorney. The attorney began suit without notifying us.

"A few days later we received a letter from this silent partner. He told us that he had been in business for more than thirty years, was wealthy—which we knew—and this was the first time that he had ever been taken to court for the collection of a bill. He thought we had been unfair in not notifying him of the circumstances, beforehand.

"He was right; and so were we.

"We were right because we had furnished the merchandise and had not been paid for it. He was right because he ought to have been warned that a suit would be instituted unless the bill was paid. He was negligent, of course, in not knowing that the concern in which he had his investment was not paying its bills; but instead of pressing the suit we withdrew it and are now clearing, or trying to clear, the records of the mercantile agencies of a report of the lawsuit. Whatever blame there was, existed in the office of the attorney for his failure of notification.

Opening a New Account

"So, I say, the grantor of credit ought to weigh all the circumstances before he attempts enforced collection. The sales and the credit departments ought to work together. In opening a new account each department ought to consider these factors:

"One—What are the prospects of distribution?

"Two—What are the prospects of the account failing? If it does fail, there ought to have been a prior searching for a larger distribution with prompt pay.

"This is another way in which the credit department can be of great assistance to the sales department. If distribution increases and the cash comes in promptly, an enterprise must prosper. Our own department's analysis on credit fits right into the sales problem.

Inexperienced Help

"Business men sometimes go wrong when, for their collection work, they depend on inexperienced help. No concern can succeed without proper attention to each of its two doors, the back door and the front door. It is through the front door that sales come in; it is through the back door that deliveries go out. There must be a capable man watching each door. Every member, and every employee of the concern lose when sales go out and collections don't come in. Inexperience never can manage collections.

"A few weeks ago one of our branches appointed a new credit manager. The proper papers were sent to me for ratification; but I notified the branch manager that he would have to get an experienced man in his credit department. I was willing to admit that the young man he had appointed to fill the position had promising capabilities; but I was convinced, through experience, that the change would not be beneficial. The answer I received from the district manager was worded something like this:

"'I know that Blank lacks experience. But he is promising. In addition, I will help him. My assistant also will help him. With all three watching the credits of this branch there should be no difficulties such as you fear.'

"I replied to him in these words:

"'You are busy running the branch. Your assistant is busy doing the job he was hired to do. Unless you have experience in the credit department the situation will be out of your control without your knowledge, and then it will be too late. The change must be made.'

"The job of collections, and the extension of credit, cannot be handled by a clerk who has something else to do nor by anyone who has not had experience. It is a job all by itself. It is an important job because on the efficiency of the credit department depends, to an appreciable extent, the success of the business.

"The salesman who is twenty per cent successful is a good salesman. If he sells one man out of every four he visits he is considered capable. But the credit man's record must range from ninety-nine to one hundred per cent. He cannot afford, if he is to keep his job, to let the losses run more than a fraction of one per cent.

"It is inaccurate to think that money outstanding on credits is only a loss of six per cent. It is much more than that. It finds representation in loss of time, stationery, stamps, the attention of those responsible for its collection. All these factors mass themselves into a loss of something like twelve or fifteen per cent.

"Write them off or collect them!"

For Revision of Federal Taxes

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, September 12, 1927.—An insistent demand for revision of federal taxes is reaching the headquarters here of the Chamber of Commerce of the United States from business interests in all parts of the country. In fact the interest of all classes of business in tax revision exceeds that in any other subject to come before the approaching Congress, according to a statement by Lewis E. Pierson, president of the Chamber.

Mr. Pierson's statement was issued coincidental with a meeting here of the Chamber's Committee on Federal Taxation, of which John R. MacColl, of Pawtucket, Rhode Island, is chairman. The committee is about ready to complete a report which will be put before the Ways and Means Committee of the House, meeting in advance of the opening of Congress, as well as before the Joint Congressional Comittee, which is studying the whole question of tax reform.

"It is clear from the correspondence coming to the Chamber," said Mr. Pierson, "that the problems of federal taxation, particularly the Chamber's advocacy of a reduction in the corporation income tax rate, are receiving more attention by business men everywhere than any other public question.

"Scores of proposals for changes in the revenue act and its administration have been received by the Chamber from its membership since the general invitation by the Joint Congressional Committee for business men to cooperate in a thoroughgoing study of the tax system.

"The Chamber's Taxation Committee has been busy for months, in cooperation with its Finance Department, in reviewing all suggestions for tax reform which should be recommended for immediate consideration by the two Congressional committees and by the United States Treasury. At the same time the Chamber's Committee has been giving study also to those questions on which attention should be continued until the Joint Congressional Committee can complete a thorough review of the entire tax structure, presumably after the adjournment of Congress."

Glazed and Fancy Paper Makers To Meet

The Glazed and Fancy Paper Manufacturers Association will hold a monthly meeting at the Biltmore Hotel, Providence, R. I., on September 27.

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Cigarette paper .....12 bls., 60 cs.
Wall paper .....3 bls., 23 cs.
Paper hangings .....16 cs.
News print .....1,179 rolls, 17 bls.
Printing paper .....47 rolls, 63 bls., 283 cs.
Wrapping paper .....64 cs.
Decalcomania paper .....19 cs.
Writing paper .....18 cs.
Note paper and envelopes.....6 pkgs., 1 cs.
Drawing paper .....6 cs.
Filter paper .....44 bls., 13 cs.
Tissue paper .....26 cs.
Pergamyn paper .....21 cs.
Basic paper .....96 cs.
Photo paper .....1 cs.
Metal paper .....12 cs.
Surface coated paper .....101 cs.
Baryta coated paper .....101 cs.
Stencil paper .....64 cs.
Cover paper .....2 cs.
Flint paper .....202 bls.
Straw board .....1,824 rolls
Miscellaneous paper .....213 cs., 6 bls.

CIGARETTE PAPER

Standard Products Corp., Rochambeau, Havre, 60 cs.
Max Spiegel & Son, Duilio, Genoa, 12 bls.

WALL PAPER

W. H. S. Lloyd & Co., Carmania, London, 12 cs.
W. H. S. Lloyd & Co., Samaria, Liverpool, 7 cs.
A. C. Dodman, Jr., Inc., Olympic, Southampton, 1 cs., 3 bls.
J. E. Bernard & Co., Olympic, Southampton, 1 cs.
J. E. Bernard & Co., Berengaria, Southampton, 1 cs.
Stern Bros., Berengaria, Southampton, 1 cs.

PAPER HANGINGS

Hensel, Bruckman & Lorbacher, Rochambeau, Havre, 1 cs.
American Express Co., Rochambeau, Havre, 1 cs.
A. C. Dodman, Jr., Inc., Baltic, Liverpool, 2 cs.
Whiting & Patterson Co., Olympic, Southampton, 4 cs.
Whiting & Patterson Co., Berengaria, Southampton, 1 cs.
Keller Dorian Paper Co., France, Havre, 7 cs.

NEWS PRINT

F. Henjes, Jr., Westphalia, Hamburg, 62 rolls.
Times Union, Gripsholm, Gothenburg, 110 rolls, 17 bls.
Parsons & Whittemore, Inc., Derrflinger, Bremen, 769 rolls.
Watch Tower Bible & Tract Society, Derrflinger, Bremen, 70 rolls.
M. Gottesman & Co., Inc., Sparreholm, Gothenburg, 168 rolls.

PRINTING PAPER

Perkins, Goodwin & Co., Transylvania, Glasgow, 71 cs.
P. C. Zuhlke, Lapland, Antwerp, 26 cs.
F. C. Strype, Ryndam, Rotterdam, 41 cs.
E. Dietzgen & Co., Ryndam, Rotterdam, 46 cs.
Japan Paper Co., Rochambeau, Havre, 12 cs.
C. B. Richard & Co., Westphalia, Hamburg, 63 bls.
Keuffel & Esser Co., Westphalia, Hamburg, 47 rolls.
Martin & Bechtold, Derrflinger, Bremen, 16 cs.
Japan Paper Co., Eastern Dawn, Antwerp, 5 cs.
E. Dietzgen & Co., Volendam, Rotterdam, 19 cs.
Perkins, Goodwin & Co., Volendam, Rotterdam, 47 cs.

WRAPPING PAPER

Birn & Wachenheim, Lapland, Antwerp, 58 cs.
Bendix Paper Co., Westphalia, Hamburg, 5 cs.
F. Ludewig, Berengaria, Southampton, 1 cs.

DECALCOMANIA PAPER

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B. F. Drakenfeld & Co., Baltic, Liverpool, 8 cs. (simplex).

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Steiner Paper Corp., Havana Maru, Kobe, 4 cs.

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F. C. Strype, Westphalia, Hamburg, 21 cs.

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American Express Co., Lapland, Antwerp, 96 cs.

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Whiting & Patterson Co., Westphalia, Hamburg, 5 cs.

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Roneo, Ltd., Minnekahda, London, 2 cs.
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COVER PAPER

International Forwarding Co., Westphalia, Hamburg, 2 cs.

FLINT PAPER

Independent Forwarding Co., Westphalia, Hamburg, 202 bls.

STRAW BOARD

Spaulding & Tewksbury, Ryndam, Rotterdam, 99 rolls.
Perkins, Goodwin & Co., Ryndam, Rotterdam, 144 rolls.
State Bank, Ryndam, Rotterdam, 120 rolls.
A. Vuyk, Ryndam, Rotterdam, 304 rolls.
Haas Bros., Burgerdyk, Rotterdam, 368 rolls.
Haas Bros., Volendam, Rotterdam, 308 rolls.
Spaulding & Tewksbury, Volendam, Rotterdam, 196 rolls.
State Bank, Volendam, Rotterdam, 121 rolls.
A. Vuyk, Volendam, Rotterdam, 164 rolls.

MISCELLANEOUS PAPER

Perry, Ryer & Co., Transylvania, Glasgow, 24 cs.
Steiner Paper Corp., Ryndam, Rotterdam, 24 cs.
S. Gilbert, Ryndam, Rotterdam, 22 cs.
J. Beckhard, Ryndam, Rotterdam, 2 cs.
Japan Paper Co., Ryndam, Rotterdam, 25 cs.
Kolesch Co., Bellepline, Rotterdam, 9 cs.
E. Dietzgen & Co., Rochambeau, Havre, 1 cs.
Hensel, Bruckman & Lorbacher, Rochambeau, Havre, 1 cs.
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A. L. Diament & Co., France, Havre, 5 cs.
Whitfield Paper Works, Havana Maru, Kobe, 25 cs.
Meadows, Wye & Co., Berengaria, Southampton, 2 cs.

RAGS, BAGGINGS, ETC.

E. J. Keller Co., Inc., Skaneland, Marseilles, 184 bls. rags.
Castle & Overton, Inc., Skaneland, Valencia, 216 bls. rags.
Brown Bros. & Co., Transylvania, Glasgow, 12 bls. rags.
Union National Bank, Bolivier, Antwerp, 84 bls. bagging.
Banco Italian Trust Co., Tergestea, Palermo, 170 bls. rags.
D. C. Andrews & Co., Ryndam, Rotterdam, 12 bls. rags.
Bulkley, Dunton & Co., Bellepline, ——, 13 bls. rags.
E. J. Keller Co., Inc., Bellepline, ——, 1 ble. flax waste.
E. Butterworth & Co., Inc., Baltic, Liverpool, 99 bls. bagging.
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Chase National Bank, Idaho, Antwerp, 17 bls. rags.
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Bulkley, Dunton & Co., Idaho, ——, 359 bls. rags.
Bulkley, Dunton & Co., Hamburg, ——, 177 bls. rags.
Bulkley, Dunton & Co., Eastern Dawn, ——, 37 bls. rags.
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Castle & Overton, Inc., Eastern Dawn, Antwerp, 47 bls. rags.
E. J. Keller Co., Inc., Eastern Dawn, Antwerp, 160 bls. flax waste.
Darmstadt, Scott & Courtney, Eastern Dawn, Antwerp, 195 bls. flax waste.
D. M. Hicks, Inc., Eastern Dawn, Antwerp, 59 bls. flax waste.
E. J. Keller Co., Inc., Sac City, Antwerp, 115 bls. flax waste.
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E. J. Keller Co., Inc., California, Havre, 115 bls. rags.
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Castle & Overton, Inc., Alicante, Valencia, 191 bls. rags.
Castle & Overton, Inc., Titania, Antwerp, 72 bls. new cuttings.
Castle & Overton, Inc., Chicago City, Bristol, 216 bls. rags.
Castle & Overton, Inc., Conehatta, Manchester, 17 bls. glue stock.
Castle & Overton, Inc., Caledonia, Glasgow, 53 bls. bagging.
Darmstadt, Scott & Courtney, Com'l Trader, Buenos Aires, 102 bls. rags.

OLD ROPE

Brown Bros. & Co., Skaneland, Huelva, 244 coils.
Brown Bros. & Co., Bolivier, Antwerp, 52 bls.
Brown Bros. & Co., Lapland, Antwerp, 51 bls.
Brown Bros. & Co., Ryndam, Rotterdam, 35 coils.
Brown Bros. & Co., Westphalia, Hamburg, 37 coils.
Brown Bros. & Co., Coeur d'Alene, Algiers, 42 coils.
Brown Bros. & Co., Volendam, Rotterdam, 60 pkgs., 100 coils.
E. J. Keller Co., Inc., California, Havre, 46 bls.
Robert Blank, Columbia, Naples, 104 bls.

CASEIN

National City Bank, Rochambeau, Havre, 334 bags.
Equitable Trust Co., Rochambeau, Havre, 665 bags.

WOOD PULP

Castle & Overton, Inc., Berlin, Bremen, 1,081 bls. wood pulp.
Parsons & Whittemore, Inc., Berlin, Bremen, 260 bls. wood pulp.
American Exchange Irving Trust Co., Tergestea, Trieste, 686 bls. wood pulp.
Buck, Kiaer & Co., Inc., Norefjord, Oslo, 2,250 bls. sulphite.
J. Anderson & Co., Norefjord, Oslo, 840 bls. sulphite.
E. M. Sergeant & Co., United States, Oslo, 325 bls. wood pulp.
Buck, Kiaer & Co., Inc., United States, Oslo, 2,200 bls. kraft pulp.

(Continued on Page 72)

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Imports of Paper and Paper Stock

(Continued from Page 70)

Johanson, Wales & Sparre, Inc., Schenectady, Gothenburg, 2,286 bls. sulphate, 387 tons.
Atterbury Bros., Inc., Sparreholm, Gothenburg, 250 bls. sulphite.
J. Anderson & Co., Sparreholm, Gothenburg, 125 bls. sulphite.
E. M. Sergeant & Co., Sparreholm, Gothenburg, 200 bls. sulphite.
E. M. Sergeant & Co., Sparreholm, Gothenburg, 898 bls. dry soda pulp.
Buck, Kiaer & Co., Inc., Sparreholm, Gothenburg, 200 bls. wood pulp.
Price & Pierce, Ltd., Sparreholm, Gothenburg, 700 bls. wood pulp.
Pagel, Horton & Co., Inc., Sparreholm, Gefle, 4,250 bls. sulphite.
Pagel, Horton & Co., Inc., Sparreholm, Gefle, 1,250 bls. sulphate.
Brown Bros. & Co., Sparreholm, Norrsundet, 5,000 bls. sulphate.
Bulkley, Dunton & Co., Sparreholm, ——, 3,500 bls. sulphite.
M. Gottesman & Co., Inc., Volendam, Rotterdam, 985 bls. wood pulp.

WOOD PULP WADDING

Birn & Wachenheim, Volendam, Rotterdam, 100 bls.
Bendix Paper Co., Volendam, Rotterdam, 50 bls.

WOOD PULP BOARDS

Lagerloef Trading Co., Schenectady, Helsingfors, 139 bls., 427 rolls.
Lagerloef Trading Co., Westphalia, Hamburg, 226 bls., 47 tons.

WOOD FLOUR

B. L. Soberski, Norefjord, Frederickstad, 3,150 bags.
State Chemical Co., Ryndam, Rotterdam, 400 bags.
The Burnet Co., Bellepline, Rotterdam, 400 bls., 20,000 kilos.
The Burnet Co., Sparreholm, Gothenburg, 291 bags.
F. B. Vandegrift & Co., Volendam, Rotterdam, 475 bags.

BALTIMORE IMPORTS

WEEK ENDING SEPTEMBER 17, 1927

M. Gottesman & Co., Inc., Schenectady, Helsingfors, 900 bls. wood pulp, 152 tons.
B. F. Bond Paper Co., Schenectady, Kotka, 23 cs. printing paper.
American Exchange Irving Trust Co., Schenectady, Kotka, 3,060 bls. sulphite, 518 tons.
Pagel, Horton & Co., Inc., Schenectady, Ornskoldsvik, 9,690 bls. sulphate, 1,640 tons.
Scandinavian Pulp Agency, Inc., Schenectady, Gothenburg, 4,572 bls. kraft pulp, 914 tons.
Scandinavian Pulp Agency, Inc., Schenectady, Gothenburg, 1,778 bls. sulphite, 355 tons.
Congoleum Nairn Co., Eastern Dawn, Antwerp, 370 bls. rags.
Congoleum Nairn Co., Eastern Dawn, Antwerp, 170 bls. bagging.
Certainteed Products Corp., Eastern Dawn, Antwerp, 157 bls. rags.
W. H. Masson & Co., Eastern Dawn, Antwerp, 122 bls. old rope.
Castle & Overton, Inc., Anaconda, Rotterdam, 1,068 bls. wood pulp.
Castle & Overton, Inc., Hannover, Germany, 1,100 bls. wood pulp.

PHILADELPHIA IMPORTS

WEEK ENDING SEPTEMBER 17, 1927

Green, Hamilton & Co., Bellepline, Rotterdam, 150 bls. cotton waste.
Castle & Overton, Inc., Sac City, Antwerp, 221 bls. rags.
J. Lang Paper Co., Sac City, Antwerp, 319 bls. rags.
N. Y. Trust Co., Capulin, Hull, 110 bls. rags.
Chase National Bank, Coeur d'Alene, Algiers, 382 bls. rags.
2nd National Bank, Coeur d'Alene, Oran, 92 bls. rags.
Bulkley, Dunton & Co., Georgia, ——, 36 bls. rags.
Bulkley, Dunton & Co., Innoko, ——, 50 bls. rags.
Robert Blank, Isonzo, Naples, 116 bls. rags.
Robert Blank, London Mariner, London, 336 bls. rags.
E. J. Keller Co., Inc., Havana Maru, ——, 46 bls. rags.
Castle & Overton, Inc., Nobles, Leghorn, 241 bls. rags.
Castle & Overton, Inc., Galtymore, Scotland, 77 bls. rags.
Castle & Overton, Inc., London Commerce, London, 61 bls. rags.
Castle & Overton, Inc., London Commerce, London, 103 bls. old rope.
Castle & Overton, Inc., Bristol City, England, 172 bls. rags.
Castle & Overton, Inc., Manchester Shipper, England, 15 bls. new cuttings.
Castle & Overton, Inc., Saga, Norway, 600 bls. wood pulp.
Castle & Overton, Inc., California, France, 132 bls. rags.
Castle & Overton, Inc., Saco, Ghent, 16 bls. rags.
Castle & Overton, Inc., Hannover, Germany, 55 bls. rags.
Castle & Overton, Inc., London Mariner, London, 149 bls. rags.
Castle & Overton, Inc., London Mariner, London, 12 bls. new cuttings.
Castle & Overton, Inc., Schodack, France, 202 bls. rags.

NORFOLK IMPORTS

WEEK ENDING SEPTEMBER 17, 1927

American Exchange Irving Trust Co., Schenectady, Kotka, 150 bls. sulphite, 25 tons.
National City Bank, Eastern Dawn, Antwerp, 100 bls. bagging.
N. Y. Trust Co., Eastern Dawn, Antwerp, 68 bls. bagging.
Dixie Jute Bagging Corp., Eastern Dawn, Antwerp, 98 bls. rags.
Darmstadt, Scott & Courtney, Eastern Dawn, Antwerp, 42 bls. bagging.
American Tobacco Co., Eastern Dawn, Antwerp, 60 cs. printed cigarette wrappers.
E. J. Keller Co., Inc., Boschdyk, Amsterdam, 43 bls. rags.

QUEBEC IMPORTS

WEEK ENDING SEPTEMBER 17, 1927

Robert Blank, Cairnesk, Leith, 134 bls. rags.

NEW ORLEANS IMPORTS

WEEK ENDING SEPTEMBER 17, 1927

Castle & Overton, Inc., Carplaka, France, 352 bls. rags.
Castle & Overton, Inc., Mount Evans, England, 322 bls. rags.
Castle & Overton, Inc., Missouri, France, 79 bls. rags.

BOSTON IMPORTS

WEEK ENDING SEPTEMBER 17, 1927

Bulkley, Dunton & Co., Idaho, ——, 100 bls. rags.
National Shawmut Bank, Idaho, Antwerp, 157 bls. cotton waste.
National Shawmut Bank, Idaho, Antwerp, 125 bls. wrapping paper.
American Exchange Irving Trust Co., Idaho, Antwerp, 117 bls. rags.
Buck, Kiaer & Co., Inc., Florida, Oslo, 3,160 bls. sulphite.
Castle & Overton, Inc., Breedyk, Rotterdam, 377 bls. wood pulp.
Castle & Overton, Inc., West Campgaw, Germany, 2,741 bls. wood pulp.

Central States Paper Merchants Meet

INDIANAPOLIS, Ind., September 19, 1927.—A special meeting of the Central States Paper Trade Association was held in Indianapolis at the Indianapolis Country Club, Thursday, September 15. About twenty membership houses attended.

While very little business requiring definite action came up, there was considerable discussion regarding several of the important questions facing the paper merchant today, including questions of "Management," "Economics," and "Mill Relations."

M. E. Harmon, of the Eddy Paper Corporation, showed a moving picture on "Carton Packing Methods," and considerable time was given to the discussion of this innovation and packing paper. W. C. McLaughlin, of the Union Paper and Twine Company, Detroit, had made a particular study of carton packing and led the discussion.

The meeting adjourned at 12:30, and after luncheon those who cared to played golf.

Arthur L. Brown, president of the association, felt that the meeting was a decided success, and indicated that many subjects presented at this meeting would form the topics for discussion at future meetings.

Four Machines in Gatineau Mill Now Operating

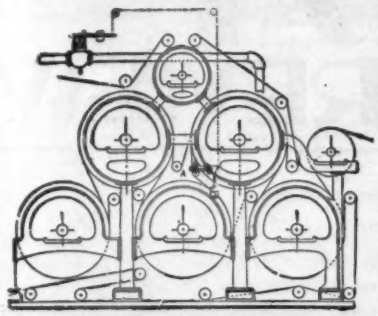
The fourth machine in the Gatineau news print mill of Canadian International Paper Company has begun production and the mill is now in complete operation. The first machine was started on April 14 and the second and third machines followed on May 19 and June 28, respectively.

With its Three Rivers and Gatineau mills the company has a capacity of 1,300 tons of news print paper a day, a capacity greater than that of all Canadian news print mills as recently as 1913 and about equal to the entire news print production of the North American continent thirty years ago. The two mills have a capacity equal to last year's production of all the news print mills of Norway and Sweden.

Little Change in Swedish Pulp Prices

WASHINGTON, D. C., September 21, 1927.—There has been little change in Swedish pulp prices, strong sulphates showing a slight increase and mechanical pulp and strong sulphite pulp a slight decrease, according to information received from Consul General Osborne, at Stockholm. Quotations on bleached and easy bleaching sulphites, news print, and wrapping papers have not changed.

The Pickles Drying Regulator



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Pickles Drying Regulator

will do everything we claim for it and more. The test costs you nothing until you are satisfied. Many mills tried one and now have every machine equipped. Write for list of users and other information.

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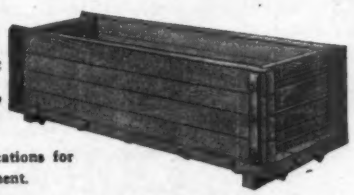

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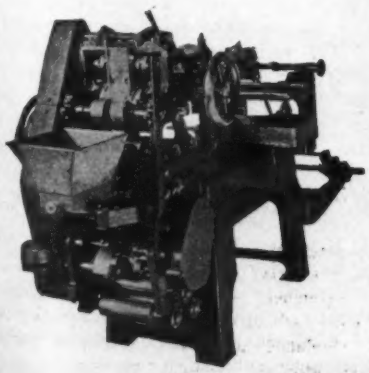

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Special Machinery Designed and Built

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New York Market Review

Office of THE PAPER TRADE JOURNAL,
Wednesday, September 21, 1927.

Conditions in the local paper market are gradually improving now that the holiday season has practically ended. The various grades of paper are in persistent demand, while prices are generally steady to firm. Sales forces of the leading paper houses are beginning their autumn campaign with every prospect of a successful wind up for the year.

News print is in better request than for some time and the competition for spot supplies is becoming more lively. Offerings are sufficient at present to take care of current needs. According to the News Print Service Bureau, stocks of news print paper at Canadian mills totaled 31,743 tons at the end of August and at domestic mills 30,335 tons, making a combined total of 62,078 tons, which was equivalent to 4.5 days' average production.

The paper board market was moderately active during the week and the recent advanced prices are being maintained, in most instances. Fine papers and tissues are in steady request, while the coarse paper market is exhibiting a strong undertone. Wrapping paper continues to move into consumption at an excellent pace.

Mechanical Pulp

Some improvement was noticed in the demand for both imported and domestic ground wood and the market is somewhat firmer. Production of mechanical pulp has been maintained in good volume of late and offerings are considered ample for current requirements. However, there will be some change in the situation if the demand expands to any great extent.

Chemical Pulp

More interest is developing in the chemical pulp market, by the board mills, in particular. While quotations are practically unchanged, it is reported that conditions are improving materially. Imported kraft is said to be firmer at from 2.65 to 2.90, ex dock, Atlantic ports. Domestic kraft is selling at from 2.70 to 3.40, f.o.b. pulp mill.

Old Rope and Bagging

Demand for domestic old rope is persistent and supplies are being taken up in excellent style. Some improvement has also been noticed in the request for imported old rope. A normal amount of business was transacted in the bagging market during the week. Roofing bagging is still in steady demand. Prices remain unchanged.

Rags

The rag market, in general, is gradually becoming more active. Orders for domestic rags are becoming frequent and many of the paper mills are reported to be making provision for increased production. While the demand for imported rags is moderate, a more active market is freely predicted for the near future. Prices are generally holding up to the levels previously quoted.

Waste Paper

Trading in the paper stock market continues active and with offerings of many of the grades decidedly limited, quotations are decidedly firm. Advances have been recorded on stitchless flat stock and overissue magazine. Print and container manilas are also stronger. Other grades to register advances are No. 1 white news and strictly overissue news.

Twine

With wrapping paper in good demand, the twine market is in a strong position. Business is expected to expand materially during the closing months of the year and advanced quotations on some of the various grades are freely predicted by some authorities on the market. At the present time, dealers are said to be very firm in their views.

President Smith Reviews Brotherhood Work

[FROM OUR REGULAR CORRESPONDENT]

ALBANY, N. Y., September 19, 1927.—William R. Smith, president of the International Brotherhood of Papermakers, is confident of his ability to win re-election in the fall voting. He has circularized local unions in the United States and Canada setting forth his record as president. On January 1, 1926, when he assumed office, he pointed out, among other things, there was a deficit of over $100,000 in the strike fund; the actual paid-up membership was at its lowest ebb in many years and the union still had on its hands the long drawn out strike with the International Paper Company.

Since that time he said the union has paid off every dollar of outstanding indebtedness; through a referendum the deficit in the strike fund has been disposed of; nine new locals have been formed and three more are assured before the end of the present year; several hundred new members have been secured and all former agreements have been renewed with all companies excepting the two or three which have changed hands and gone out of existence.

He calls attention to the fact that the I. P. strike has been disposed of and that the doors of that company have been opened to union members for jobs that were previously available only to non-union workers and strikebreakers. "As a result of proper methods of procedure and some degree of diplomacy, there is not a strike or lockout of any nature in the industry and our organization has again the confidence and respect of the great majority of those engaged in the industry," he said.

Paper Workers Acquire Life Insurance

Two firms engaged in the manufacturing of paper have recently acquired group life insurance policies through the Prudential Insurance Company of America. They are the Scott Paper Company, of Chester, Pa., and the Bergstrom Paper Company, of Neenah, Wis.

The Scott policy is of the non-contributory type, the employees receiving protection of $500 each, without any cost to them. It involves a total of $228,500 for 457 employees.

The Bergstrom Paper Company policy is of the contributory type, the employees sharing in the payment of the premiums with the employing company. They are insured in amounts ranging from $1,000 to $3,000, according to the position held, and the total amount of insurance involved is $212,000, covering 171 employees.

W. J. Blackley Visits Coast

[FROM OUR REGULAR CORRESPONDENT]

INDIANAPOLIS, Ind., September 19, 1927.—W. J. Blackley of Beveridge Paper Company of Indiana, accompanied by Mrs. Blackley, is making a combined business and pleasure trip to California, Oregon, Washington and British Columbia.

Prompt deliveries made from stocks in
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Dependability

Another reason why Heller & Merz Colors are preferred by many well informed judges of dyestuffs. We have put 58 years of experience into their making—as well as a thorough knowledge of modern finishing requirements.

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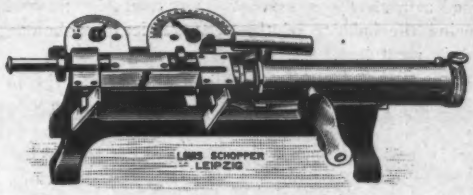

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LAWRENCE MASS.

Miscellaneous Markets

Office of THE PAPER TRADE JOURNAL,
Wednesday, September 21, 1927.

Conditions in the local chemical market were fairly satisfactory during the past week. Most of the business transacted was along routine lines and there were an encouraging number of inquiries for supplies for future requirements. Contract withdrawals were maintained at a steady pace and the movement is expected to expand during the balance of the year. Prices are holding up to schedule, in most instances.

BLANC FIXE.—Steadiness continues to prevail in the blanc fixe market and both the pulp and the powder are in good demand. Shipments against contract are moving in good volume. Prices remain unchanged. The pulp is quoted at $60 per ton, in bulk, while the powder is selling at from 4 cents to 4¼ cents a pound, in barrels, at works.

BLEACHING POWDER.—Demand for bleaching powder continues active and the market is in a sound position. Contract shipments are proceeding at a steady rate. Prices are steady to firm, due to the fact that offerings are rather limited. Bleaching powder is selling at from $2 to $2.40 per 100 pounds, in large drums, at works, according to quantity.

CASEIN.—Some improvement was noticed in the casein market. An advance was recorded on the domestic product. The quotations on imported casein remain unaltered. Domestic casein is now selling at from 17 cents to 18¼ cents a pound. Foreign casein is still quoted at from 18 cents to 18¼ cents a yound, all in bags, car lot quantities.

CAUSTIC SODA.—Heavy shipments of caustic soda are moving into consumption. Stocks on hand are not excessive and the market has been steady in tone. Solid caustic soda is offered at from $3 to $3.10 per 100 pounds, in large drums, at works. Spot car lots are quoted at from $3.20 to $3.25 per 100 pounds. The flake and the ground are selling at from $3.40 to $3.50 per 100 pounds.

CHINA CLAY.—Although the china clay market has been rather quiet of late, there has been a good volume of inquiries for future business. Prices remain steady and unchanged. English china clay is still quoted at from $15 to $25 a ton, ship side. Domestic paper makers' clay is selling at from $8 to $9 a ton, in bulk, at mine, and pulverized at from $10 to $12 a ton.

CHLORINE.—The chlorine market is exhibiting a strong undertone. Contract withdrawals are proceeding in a normal manner. The prevailing demand is fairly active and prices remain unaltered. Chlorine is quoted at 4 cents a pound, in tanks, or multi-unit cars, at works, on contract orders. The spot quotation ranges from 4¼ cents to 4½ cents a pound.

ROSIN.—Trading in the rosin market was fairly lively during the past week. Most of the orders, however, were for small shipments on account of immediate needs. Prices continue to fluctuate. At the naval stores, the grades of gum rosin used in the paper mills are quoted at from $10.10 to $10.15 per 280 pounds, in barrels, ship side. Wood rosin is still selling at $9.50 per 280 pounds, southern shipping points.

SALT CAKE.—Business in the salt cake market is gradually improving. Supplies on hand are reported to be light and, with manufacturers well sold ahead, quotations are steady to firm. Salt cake is still offered at from $18 to $19 a ton, in bulk, at works. Chrome salt cake is selling at from $14 to $15 a ton, in bulk, at works.

SODA ASH.—The soda ash market is in a strong position. Shipments are proceeding in good volume, on contract. The excellent demand experienced of late shows no signs of diminishing. Prices remain unaltered. Contract quotations on soda ash, in car lots, at works, per 100 pounds, are as follows: in bulk, $1.20; in bags, $1.32½, and in barrels, $1.57½.

STARCH.—Production of starch is being maintained in sufficient volume to take care of the current demand. Contract withdrawals are moving at a satisfactory rate. Prices remain unchanged, despite recent advances in the cost of raw materials. Special paper makers' starch is quoted at $3.07 per 100 pounds, in bags, and at $3.24 per 100 pounds, in barrels, at works.

SULPHATE OF ALUMINA.—Consumption of sulphate of alumina has been excellent of late and the market is exhibiting a strong tendency. Prices are being maintained at the levels which have been quoted for some considerable time. Commercial grades of sulphate of alumina are still selling at from $1.40 to $1.45 per 100 pounds. The iron free is quoted at from $2 to $2.05 per 100 pounds, in bags, at works.

SULPHUR.—The sulphur market is practically unchanged. This product is in persistent demand and is moving into consumption at a satisfactory pace. Inquiries for future business are coming in fairly regularly. Sulphur is still selling at from $18 to $19 a ton, in bulk, at mine, according to quantity. The spot quotation remains unaltered at $20 per ton.

TALC.—Offerings of talc are about sufficient to take care of current requirements. The market is exhibiting a sound undertone and prices remain steady to firm. Quotations on domestic talc range from $16 to $18 a ton, at eastern mills. French talc is still quoted at from $18 to $22 a ton, ship side.

To Build Box Factory at Tulsa

TULSA, Okla., September 19, 1927.—An industry which probably will have a gross income of $1,000,000 a year was assured for Tulsa when formation of the Southwest Box Company was announced. The factory will open this fall.

The box company has been incorporated for $200,000 and will build a $150,000 plant on the Sand Springs road near the Kerr Glass factory, it was announced.

Keokuk, Iowa, capital is largely responsible for the new firm here though 20 per cent of the stock has been taken by local capitalists.

A. T. Kerr, of the Kerr Glass Company, is treasurer of the organization. Elmo Thompson and D. Young of Tulsa represent this city on the board of directors.

The factory was obtained for Tulsa through the activities of E. N. Trusler, in charge of the industrial department of the Tulsa Chamber of Commerce. Local capital pledged to the new firm made it possible for it to locate here, it was said.

The Southwest Company will be controlled by the same group that now controls the Iowa Fiber Box Company of Keokuk. Fiber boxes of all sizes will be manufactured. The company also is planning to produce a very light box of unusual strength for use in shipping products by airplane, it was stated.

The firm will employ about 60 men to start and probably will use more than 80 more when the plant is running at full capacity. The annual payroll is estimated to be $150,000.

J. O. Hoerner of Keokuk, who plans to make his home in Tulsa, will be president and general manager of the company. R. H. Hoerner is vice president and M. G. Sterne is secretary.

Newfoundland's Embargo

Through an amendment to the Crown Lands Act, the Newfoundland Legislature has adopted the following clause for establishing an embargo on pulp wood and other logs:

"Section 43. Notwithstanding anything in any Act contained, no holder of a timber or pulp license or of lands held in fee simple or under lease or demise from the Crown shall, (save under and to the quantity provided by any special Act expressly permitting him so to do) take or carry away for exportation from any lands so licensed or held, any trees, logs or timber unless and until the same have been manufactured into paper, paper pulp, sawn lumber or other saleable products of timber, under a penalty of not less than twenty dollars for every tree cut, to be recovered by suit in the name of the Minister of Agriculture and Mines; and trees or timber cut into cordwood, pulp wood, pit-props or other lengths and whether barked or not shall be held not to be saleable products for the purposes of this Section."

Clay

300 tons daily

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AT LAST!!

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Use "S" Brand or "A-Syrup" Silicate of Soda in the beater to increase the tensile and tearing strength. At the same time, you can improve another characteristic of good kraft—resistance to water and ink. Our advisory service is free to you also, without obligation.

[Don't forget the Chemical Show, New York, Sept. 26 - Oct. 1. You are welcome in our booths 285 and 286.]

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Clean and Economical

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Market Quotations

Quoted by Hepburn & Co., 74 Broadway, N. Y. City, to whom all inquiry for quotations on these or any other Securities is referred.

BONDS	BID	OFFERED
Advance Bag & Paper, 7s 1943	105	107
A. P. W. Pulp & Power, 7s 1945	101	102
American Writing Paper, 6s 1947	79	82
Bastrap Pulp & Paper, 6½s 1940	100	103
British Columbia Pulp & Paper, 6s 1950	85	90*
Beaver Products Corp., 7½s 1942	106	109
Berkshire Hills Paper, 8s 1941	60	80
Brown Paper Co., 1st 5½s 1946	94	98
Bryant Paper Co., 6s 1942	100½	102
Cape Breton Pulp & Paper, 6s 1932	101	103
Central Paper Serial 6, 6½s 1942	89	...
Champion Coated Paper, 6s 1926 to 1932	99	...
Champion Fibre, 8s 1930	100	...
Champion Paper Corp'n, 1st 6s 1945	95	97
Continental Paper Products, 6½s 1943	88	91½
Cornell Wood Prod., 7½s 1937	100	104*
Crown Willamette Paper, 6s 1951	97	101
Donnaconna Paper, 6s 1940	101	102½
Dells Paper & Pulp Serial, 6s 1926-38	*95	...
Eastern Mfg. Co., 7s 1938	89	91
Eddy Paper, 7½s 1931	102	104
Escanaba Paper Serial, 6s 1926-39	94	96
Filer Fibre Serial, 7s 1926-39	95	...
Fort Orange Paper, 7s 1942	95	100*
Fox River Paper, 7s 1931	99	...
Gair Co. (The Robt.), 7s 1937	104	106
Gilbert Paper Co., 6½s 1926-29	89	...
Hammermill Paper, 6s 1939	100	103*
Hoberg Paper & Fibre, 7s 1937	94½	96
Itaska Paper & Prairie River Power, J+5½s 1926-38	94	96*
Itaska Paper, 1st 6s 1933-38	96	98*
Kalamazoo Veg. Parchment, 6s 1938	98	...
Marinette & Menominee, 7½s 1936	103½	105
Menasha Printing & Carton, 6½s 1939	99½	...
Mengel Company, 7s 1926 to 1934	103	...
Monroe Paper Products, 7½s 1932	96	...
Munising Paper, 6s 1927-36	96	100
Nekoosa Edwards, 1st Ref. 6s 1928 to 1942	96	99*
Orono Pulp & Paper, 6s 1943	98	...
Orono Pulp & Paper, 5s 1941	94	...
Oswego Falls Corp., 6s 1941	98	100*
Oxford Paper, 6s 1947	104	...
Paepcke Paper Mills, 7s 1930	99	None
Parsons Pulp & Lumber, 7s 1928	97	...
Parker Young Co., 6½s 1944	96½	98½
Paterson Parchment Paper, 6s 1938	100½	102
Penobscot Chemical Fibre, 6s 1942	98	...
Poland Paper, 7s 1930	98	...
Port Alfred Pulp, 6½s 1943	*96	...
Queens City Paper, 7s 1932	95	100*
Richardson Co., 6s 1938	100	...
Spanish River Pulp & Paper, 8s 1941	106	110
Stevens & Thompson Paper, 6s 1942	93	95
St. Anne Paper, 6½s 1946	95½	98*
St. Croix Paper, 5s 1926-37	95	98*
St. Regis Paper Serial, 6½s 1926-35	98½	...
Tait Paper & Color Industries, 6s 1934	90	95
Taggart Bros. Co., 6s 1944	94	97
Ticonderoga Pulp & Paper, 5s 1930	95	98
Ticonderoga Pulp & Paper, 6s 1940	99	101
Warren (The S. D.) Company, 6s 1945	99	101
Wotab Paper, 6½s 1943	102	...
Westfield River Paper, 7s 1926-43	Wanted	...
Whitaker Paper, 7s 1942	106	108
Witmer-Parsons Pulp & Lbr. (Units)	63	70

STOCKS	BID	ASKED
Advance Bag & Paper, 8% Pfd.	100	None
Am. Tissue Mills, 7% Pfd.	95	100
British Columbia P. & P., Pfd.	65	70
Brompton Pulp & Paper, 8% Pfd.	93	98*
Brown Corpn., 7% Pfd.	97	100*
Champion Fibre, 7% Pfd.	105	...
Diem & Wing, 7% Cum. Pfd.	87	...
Donnaconna Paper, Com.	58	...
Donnaconna Paper, Pfd.	99	None
Eastern Mfg. Co., 1st Pfd.	34	37
Great Northern Paper (new)	62	65
Hammermill Paper, 7% Pfd.	105	110
Hinde & Dauch, Com.	135	...
Hinde & Dauch, Pfd.	100	...
Holyoke Card & Paper	150	None
Marathon Paper Mills, Com.	125	...
Midwest Box Co., Pfd. 8%	80	85
Midwest Box Co., Pfd. 6%	55	65
Louis De Jonge Co., 7% Pfd.	93	96
Oxford Papers, Com.	170	...
Oxford Paper Co., Pfd.	175	...
Penobscot Chemical Fibre, Com.	65	75*
Richardson Co., 7% Pfd.	104	...
Rubberoid Company	68	72
Seaman Container, Class B (par $1)	1	None Off.
Seaman Paper Co.	Wanted	None Off.
St. Croix Paper	150	170
St. Regis Paper Co., 7% Cum. Pfd.	102½	104½
Westfield River Paper Co., 1st Pfd.	Wanted	None Off.
West Virginia Pulp and Paper, Com.	52	57
West Virginia Pulp and Paper, Pfd.	101	103
Whittaker Paper, 7% Cum. Pfd.	97	103

* Nominal.

Paper

(F. o. b. Mill)

Ledgers	11.00	@38.00
Bonds	9.00	@45.00
Writings—		
Extra Superfine	14.00	@32.00
Superfine	14.00	@32.00
Tub sized	10.00	@15.00
Engine Sized	8.00	@11.00
News—		
Rolls, contract	3.25	@ —
Rolls, transient	3.25	@ 3.50
Sheets	3.65	@ 3.85
Side Runs	3.00	@ 3.75
Book, Cased—		
S. & S. C.	6.35	@ 7.75
M. F.	6.25	@ 7.75
Coated and Enamel	8.00	@15.00
Lithograph	8.00	@15.00
Tissues—Per Ream—		
White No. 1	.75	@ 1.00
Anti-Tarnish	1.10	@ 1.90
Colored	1.00	@ 2.00
White No. 2	.75	@ .85
Kraft	.90	@ 1.00
Manila	.75	@ .85
Kraft—		
No. 1 Domestic	6.25	@ 6.50
No. 2 Domestic	5.25	@ 5.50
Southern	4.75	@ 5.25
Imported	6.50	@ 7.00
Manila—		
No. 1 Jute	9.00	@ 9.25
No. 2 Jute	7.75	@ 8.50
No. 1 Wood	4.75	@ 5.25
No. 2 Wood	4.00	@ 4.50
Butchers	3.75	@ 4.25
Fibre Papers—		
No. 1 Fibre	5.00	@ 5.50
No. 2 Fibre	4.75	@ 5.25
Common Bogus	2.75	@ 3.00
Screenings	3.00	@ 3.25
Card Middles	4.00	@ 5.00
Glassine—		
Bleached, basis 25 lbs.	13.00	@16.00
Bleached, basis 20 lbs.	15.00	@16.00

(Delivered New York)

Boards—per ton—		
News	50.00	@52.50
Straw	53.50	@57.50
Chip	47.50	@50.00
Binders' Boards	70.00	@75.00
Sgl. Mla. Ll. Chip.	57.50	@60.00
Wood Pulp	80.00	@85.00
Container	67.50	@72.50

Mechanical Pulp

(Ex-Dock)

No. 1 Imported—		
Moist	28.00	@30.00
Dry	32.00	@34.00

(F. o. b. Mill)

No. 1 Domestic	27.00	@30.00
Screenings	15.00	@20.00

Chemical Pulp

(Ex-Dock, Atlantic Ports)

Sulphite (Imported)—		
Bleached	3.50	@ 4.50
Easy Bleaching	2.85	@ 3.10
No. 1 strong unbleached	2.50	@ 2.75
Mitscherlich unbleached	2.65	@ 3.40
No. 2 strong unbleached	2.40	@ 2.55
No. 1 Kraft	2.65	@ 2.90
No. 2 Kraft	2.50	@ 2.60
Sulphate—		
Bleached	3.75	@ 4.00

(F. o. b. Pulp Mill)

Sulphite (Domestic)—		
Bleached	3.40	@ 4.75
Easy Bleaching Sulphite	2.85	@ 3.05
News Sulphite	2.50	@ 2.70
Mitscherlich	3.25	@ 3.70
Kraft (Domestic)	2.70	@ 3.40
Soda Bleached	3.25	@ 3.50
Sulphate Screenings—		
Coarse	.75	@ .85
Refined	1.50	@ 1.85

Domestic Rags

New Rags

(Prices to Mill f. o. b. N. Y.)

Shirt Cuttings—		
New White, No. 1	11.50	@12.00
New White, No. 2	8.00	@ 8.50
Silesias No. 1	7.25	@ 7.75
New Unbleached	10.25	@10.75
Washables	4.25	@ 4.75
Fancy	5.50	@ 6.00
Blue Overall	6.75	@ 7.25
New Blue Prints	5.25	@ 5.50
New Soft Blacks	5.25	@ 5.75
Mixed Khaki Cuttings	4.50	@ 5.25
Pink Corset Cuttings	8.00	@ 8.50
O. D. Khaki Cuttings	5.00	@ 5.50
Men's Corduroy	3.75	@ 4.25
New Mixed Blacks	3.50	@ 3.75

Old Rags

White, No. 1—		
Repacked	5.75	@ 6.50
Miscellaneous	4.75	@ 5.25
White, No. 2—		
Repacked	3.25	@ 3.75
Miscellaneous	2.75	@ 3.00
St. Soiled, White	2.50	@ 2.75
Thirds and Blues—		
Repacked	2.25	@ 2.50
Miscellaneous	1.75	@ 2.00
Black Stockings	3.25	@ 3.75
Roofing Rags—		
Cloth Strippings	1.60	@ 1.70
No. 1	1.60	@ 1.70
No. 2	1.35	@ 1.45
No. 3	1.25	@ 1.35
No. 4	1.25	@ 1.35
No. 5A	.95	@ 1.05

Foreign Rags

New Light Silesias	7.00	@ 7.50
Light Flannelettes	7.75	@ 8.50
Unbleached Cottons	10.00	@11.00
New White Cuttings	10.50	@11.50
New Light Oxfords	7.00	@ 7.50
New Light Prints	5.50	@ 6.50
New Mixed Cuttings	3.00	@ 3.50
New Dark Cuttings	2.75	@ 3.25
No. 1 White Linens	7.00	@ 7.75
No. 2 White Linens	5.25	@ 6.00
No. 3 White Linens	4.00	@ 4.50
No. 4 White Linens	3.00	@ 3.50
Old Extra Light Prints	2.75	@ 3.25
Ord. Light Prints	2.25	@ 2.50
Med. Light Prints	1.90	@ 2.10
Dutch Blue Cottons	2.25	@ 2.50
German Blue Linens	2.50	@ 2.75
German Blue Cottons	2.00	@ 2.25
Checks and Blues	1.75	@ 2.00
Lindsay Garments	1.70	@ 1.75
Dark Cottons	1.55	@ 1.60
Shoppery	1.50	@ 1.55
French Blues	2.25	@ 2.50

Old Rope and Bagging

(Prices to Mill f. o. b. N. Y.)

Gunny No. 1—		
Foreign	1.80	@ 1.90
Domestic	1.80	@ 1.90
Wool Tares, light	1.60	@ 1.70
Wool Tares, heavy	1.60	@ 1.70
Bright Bagging	1.60	@ 1.70
Small Mixed Rope	1.50	@ 1.65
Manila Rope—		
Foreign	3.25	@ 3.75
Domestic	4.25	@ 4.75
New Burlap Cut	3.00	@ 3.25
Hessian Jute Threads—		
Foreign	3.50	@ 4.00
Domestic	3.25	@ 3.50

Old Waste Papers

(F. o. b. New York)

Shavings—		
Hard, White, No. 1	3.25	@ 3.50
Hard, White, No. 2	2.75	@ 2.90
Soft, White, No. 1	2.85	@ 3.00
Flat Stock—		
Stitchless	1.35	@ 1.40
Overissue Mag.	1.25	@ 1.35
Solid Flat Book	1.30	@ 1.35
Crumpled No. 1	.85	@ .95
Solid Book Ledger	1.90	@ 2.10
Ledger Stock	1.55	@ 1.65
New B. B. Chips	.65	@ .75
Manilas—		
New Env. Cut	2.40	@ 2.60
New Cuttings	1.60	@ 1.85
Extra No. 1 old	1.25	@ 1.35
Print	.85	@ .95
Container	.75	@ .85
Bogus Wrapper	.75	@ .85
Old Kraft Machine Compressed bales	2.10	@ 2.20
News—		
No. 1 White News	1.75	@ 1.80
Strictly Overissue	.85	@ .90
Strictly Folded	.70	@ .75
No. 1 Mixed Paper	.65	@ .70
Common paper	.35	@ .45

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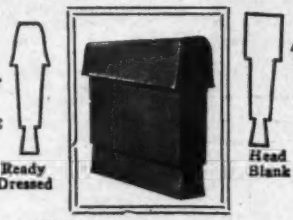
LABOR SAVING—TIME SAVING

THE MOST ECONOMICAL FILLING THAT CAN BE PUT IN A MORTISE WHEEL



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WRITE FOR INSTRUCTION SHEET "C" WHICH IS FREE

QUICK SERVICE ON ALL SIZES

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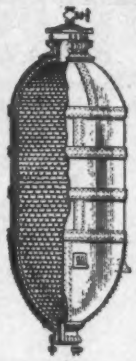

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Our Installations Fully Guaranteed.

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ST. REGIS PAPER COMPANY

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THE PULP BUYER

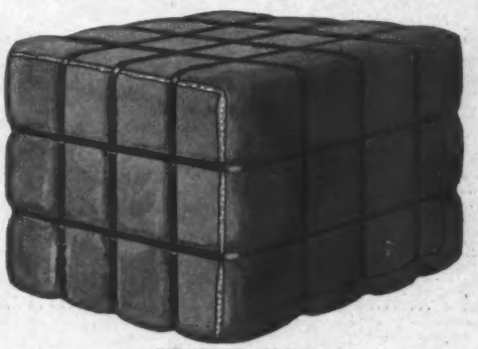
WILL TELL YOU WHY

Fidalgo System Dried and Shredded Pulp (Air Dried)

IS THE ANSWER

Units 10 to 75 ton daily capacity
Producing a compact air dry bale (suitable rail and water shipment 40-45 cu. ft. per ton) of *shredded* pulp.
Higher test than when dried on cylinder machines.

33 1/3 SAVING AT BEATER



WRAPPED BALE

GENERAL ADVANTAGES

No Mechanical Pressure used until dry—upon cutting straps at Beater entire bale allowed to absorb rapidly. No surface pressure on wet pulp during drying process. Only current of warm dehydrated air, produces a product that has its surface pores wide open for ready absorption in Beater and produces a pulp testing from 10 to 30 points higher than any pulp dried in sheet form.

LABOR, STEAM, POWER, ETC.

LESS LABOR than any cylinder or mechanical pressure dryer.
Less than 3,500 lbs. steam required (either live or exhaust) per ton air dried pulp, with economizer pulp can be dried with waste stack gases.

CLEANLINESS

Pulp being dried in closed insulated compartment—FIDALGO SYSTEM produces cleaner pulp.

USERS

Eight installations in United States and ten on order or under construction.
Your inspection invited.

COST

Less than any Drying Method we know of to install.

Write Us for Particulars

Technical Economist Corporation

40 RECTOR STREET NEW YORK, N. Y.
Telephone Whitehall 5243 Cable HERENCO

Twines

(F. o. b. Mill)

Cotton—			
No. 1	.28	@	.29
No. 2	.26	@	.27
No. 3	.24	@	.25
B. C., 18 basis	.38	@	.40
A. B. Italian, 18 basis	.48	@	.53
Finished Jute—			
Dark 18 basis	.24	@	.25
Light 18 basis	.27	@	.28
Jute Wrapping, 3-6 Ply—			
No. 1	.21	@	.23
No. 2	.20	@	.22
Tube Rope—			
4-ply and larger	.18	@	.19
Fine Tube Yarn—			
5-ply and larger	.23	@	.27
4-ply	.24	@	.28
3-ply	.26	@	.30
Unfinished India—			
Basis	.16	@	.17
Paper Makers Twine			
Balls	.13	@	.15
Box Twine, 2-3 ply	.17	@	.19
Jute Rope	.21	@	.23
Ameri. Hemp, 6	.29	@	.31
Sisal Hay Rope—			
No. 1 Basis	.18	@	.20
No. 2 Basis	.16	@	.18
Sisal Lath Yarn—			
No. 1	.16	@	.18
No. 2	.14	@	.16
Manila Rope	.24	@	.26

CHICAGO

All Rag Bond	.35	@	.41
No. 1 Rag Bond	.25	@	.35
No. 2 Rag Bond	.14	@	.25
Water Marked Sulphite Bond	.09	@	.12
Sulphite Bond	.06¾	@	.11
Superfine writing	.18	@	.24
No. 1 fine writing	.14	@	.18
No. 2 fine writing	.12	@	.14
No. 3 fine writing	.08½	@	.12
No. 1 M. F. Book	.06½	@	.07¼
No. 2 M. F. Book	.05¼	@	.06¾
No. 1 S.&S.C. Book	.06¾	@	.07¾
No. 2 S.&S.C. Book	.05¾	@	.06½
Coated Book	.07½	@	.12
Coated Label	.07½	@	.10
News—Roll, mill	.03½	@	.04¼
News—Sheets, mill	.03¾	@	.04¾
No. 1 Manila	.04¼	@	.05¾
No. 1 Fibre	.04¾	@	.05¼
No. 2 Manila	.04¼	@	.04¾
Butcher's Manila	.04	@	.04½
No. 1 Kraft	.05¼	@	.06¾
Southern Kraft	.04½	@	.05
No. 2 Kraft	.05	@	.05¼
Wood Tag Boards	.04¾	@	.06¾
Sulphite Screenings	.03	@	.03¾
Manila Tissue—			
24x36 Sheet	.07	@	.07¾
White Tissue—			
20x30 Sheet	.07¼	@	.07½
Boards, per ton—			
(Delivered Central Territory)			
Plain Chip	45.00	@	47.50
Solid News	47.50	@	—
Manila Line Chip	55.00	@	57.50
Container Lined—			
(Delivered Central Territory)			
85 Test	65.00	@	70.00
100 Test	70.00	@	75.00

PHILADELPHIA

Paper

(F. o. b. Mill)

Bonds	.07	@	.40
Ledgers	.11	@	.40
Writings—			
Superfine	.13	@	.18
Extra fine	—	@	.22
Fine	.20	@	.26½
Fine, No. 2	.16	@	.25
Fine, No. 3	.12	@	.20
Book, M. F.	.06¾	@	.07
Book, S. S. & C.	.06	@	.07½
Book, Coated	.11	@	.16
Coated Lithograph	.09	@	.12
Label	.09	@	.12
News	.03¾	@	.04
No. 1 Jute Manila	.09½	@	—
Manila Sul., No. 1	.04½	@	.06
Manila, No. 2	.04	@	.04½
No. 2 Kraft	.05	@	.05¼
No. 1 Kraft	.06	@	.06¼
Common Bogus	.02¾	@	—
Straw Board	60.00	@	65.00
News Board	45.00	@	50.00
Chip Board	40.00	@	42.00
Wood Pulp Board	4.50	@	5.00
(Carload Lots)			
Binder Boards—			
No. 1, per ton	85.00	@	90.00
No. 2, per ton	70.00	@	75.00
Carload lots	60.00	@	65.00
Tarred Felts—			
Regular	66.00	@	68.00
Slaters	70.00	@	72.00
Best Tarred, 1-ply (per roll)	1.85	@	1.95
Best Tarred, 2-ply (per roll)	1.55	@	1.70
Best Tarred, 3-ply	2.10	@	2.15
No. 1 Mixed Paper	.65	@	.70

Bagging

(F. o. b. Phila.)

Gunny, No. 1—			
Foreign	2.00	@	2.25
Domestic	1.75	@	2.00
Manila Rope	3.50	@	4.00
Sisal Rope	1.25	@	2.00
Mixed Rope	1.10	@	1.25
Scrap Burlaps	1.50	@	1.65
Wool Tares, heavy	3.00	@	3.50
Mixed Strings	1.25	@	1.35
No. 1, New Light Burlap	2.25	@	2.50
New Burlap Cuttings	2.25	@	2.50

Old Papers

(F. o. b. Phila.)

Shavings—			
No. 1 Hard White	3.50	@	3.60
No. 2 Hard White	3.00	@	3.25
No. 1 Soft White	2.75	@	3.00
No. 2 Soft White	1.90	@	2.00
No. 1 Mixed	1.50	@	1.60
No. 2 Mixed	.90	@	1.00
Solid Ledger Stock	1.90	@	2.00
Writing Paper	1.65	@	1.75
No. 1 Books, heavy	1.25	@	1.30
No. 2 Books, light	.80	@	.85
No. 1 New Manila	2.40	@	2.50
No. 1 Old Manila	1.50	@	1.60
Print Manila	1.15	@	1.20
Container Manila	.90	@	1.00
Old Kraft	2.00	@	2.20
Common Paper	.50	@	.60
No. 1 Mixed Paper	.50	@	.60
Straw Board, Chip	.60	@	.65
Binders Board, Chip	.60	@	.65
Overissue News	.80	@	.90
Old Newspaper	.60	@	.65

Domestic Rags (New)

(Price to Mill, f. o. b. Phila.)

Shirt Cuttings—			
New White, No. 1	.11½	@	.12
New White, No. 2	.07	@	.07½
Light Silesias	.07	@	.07½
Silesias, No. 1	.07½	@	.08
Black Silesia, soft	.05	@	.05½
New Unbleached	.10½	@	.11
Washable	.04	@	.04½
Fancy	.05½	@	.06
Cottons—according to grades—			
Blue Overall	.07½	@	.08
New Blue	.03½	@	.04
New Black Soft	.05½	@	.06
New Light Seconds	.03	@	.03¼
Khaki Cuttings	.04½	@	.05
Corduroy	03	@	.03¼
New Canvas	.08	@	.09
New Black Mixed	.05	@	.05½

Domestic Rags (Old)

White, No. 1—			
Repacked	4.50	@	5.25
Miscellaneous	3.50	@	4.00
White, No. 2—			
Repacked	.02½	@	.03
Miscellaneous	.02	@	.02¼
Thirds and Blues—			
Repacked	2.50	@	2.75
Miscellaneous	1.50	@	1.75
Black Stockings	3.25	@	3.50
Roofing Stock—			
No. 1	1.50	@	1.60
No. 2	1.37½	@	—
No. 3	1.25	@	1.35
No. 4	1.10	@	1.20
No. 5A	.90	@	1.00
B	.80	@	.90
C	.80	@	.90

BOSTON

Paper

(F. o. b. Mill)

Ledgers—			
Sulphite	.07½	@	.15
Rag content	.15	@	.30
All rag	.38	@	.52½
Bonds—			
Sulphite	.06½	@	.11½
Rag content	.15	@	.30
All rag	.36½	@	.65
Writings	.07	@	.20
Superfines	.11	@	.31
News	.03½	@	.04
Book, Super	.06	@	.09
Book, M. F.	.05¾	@	.08½
Book, Coated	.08½	@	.20
Coated Litho	.09	@	.12
Label	.09½	@	.15
Jute Manila No. 1	.11	@	.13
Manila, Sul. No. 1	.04¾	@	.06½
Manila, Sul. No. 2	.03¾	@	.04½
No. 1 Kraft	.05¾	@	.06½
No. 2 Kraft	.04¾	@	.05¾
Common Bogus	.02	@	.02½
Delivered New England points			
Straw Board, rolls	.009		57.50
Straw Board in Sheets, basis 35s to 70s			53.50
Filled News Board			50.00
Chip Board			47.50
Single Manila Pulp lined board	57.50	@	62.50
Single White, patent coated board bender	75.00	@	82.50
Wood Pulp Board	80.00	@	85.00
Binder Boards	70.00	@	75.00
(F. o. b. Mill)			
Tarred Felts—			
Regular, carload lots	65.00	@	—

Old Papers

(F. o. b. Boston)

Shavings—			
No. 1 Hard White	2.75	@	3.10
No. 2 Hard White	2.60	@	2.90
White Blank News	1.75	@	—
Manila Env. Cuttings	2.00	@	2.25
No. 1 Soft White	2.85	@	3.00
No. 1 Soft White	2.75	@	3.00
No. 1 Mixed	1.10	@	1.15
No. 2 Mixed	.85	@	.90
Solid Ledger Stock	1.95	@	2.00
No. 1 Books, Heavy	1.35	@	1.45
No. 1 Books, Light	—	@	1.15
Old Kraft	2.05	@	2.25
No. 1 Old Manila	1.40	@	1.60
No. 1 Mixed Paper	.55	@	.62½
Print Manila	.70	@	.80
Overissue News	.80	@	—
Old Newspapers	.65	@	—
Box Board, Chip	.65	@	—

Bagging

(Price f. o. b. Boston)

Gunny No. 1—			
Foreign	1.75	@	—
Domestic	1.50	@	1.60
Manila Rope and Strings—			
Foreign	3.50	@	3.75
Domestic	4.25	@	4.37½
Mixed Strings	.90	@	1.00
Scrap Burlaps	1.50	@	1.75
Wool Tares, heavy	1.40	@	1.60
New Burlap Cutting	2.15	@	2.25

Domestic Rags (New)

(Price f. o. b. Boston)

Shirt Cuttings—			
New White No. 1	.12½	@	—
Silesias, No. 1	.07	@	.07½
New Unbleached	.10	@	.10½
Fancy	.05¾	@	.06
Washable	.04½	@	—
Cottons—Acording to Grades—Blue—			
Blue Overalls	—	@	.07
New Black, soft	.04	@	.04½
Khaki Cuttings	.05	@	.05½
Corduroy	.03	@	.03½
New Canvas	.09	@	.10

Domestic Rags (Old)

(Price f. o. b. Boston)

White No. 1—			
Repacked	5.00	@	5.25
Miscellaneous	5.00	@	—
White No. 2—			
Repacked	.04½	@	.05
Miscellaneous	.03½	@	.04
Thirds and Blues—			
Repacked	2.12½	@	2.37½
Miscellaneous	1.75	@	1.90
Roofing Stock—			
No. 1	1.45	@	1.55
No. 2	1.33	@	1.43
No. 3	.96	@	—
No. 4	1.10	@	—

TORONTO

Paper

(F. o. b. Mill)

Bond—			
No. 1 Sulphite	.12½	@	—
No. 2 Sulphite	.10¾	@	—
No. 1 Colored	.13½	@	—
No. 2 Colored	.11¾	@	—
Ledgers (sulphite)	—	@	—
Ledgers, No. 1	.36	@	—
Ledgers, No. 2	.27	@	—
Writing	.09½	@	.10
News f. o. b. Mills—			
Rolls (carloads)	3.25	@	—
Sheets (carloads)	3.75	@	—
Sheets (2 tons or over)	4.00	@	—
Book—			
No. 1 M. F. (carloads)	7.75	@	—
No. 2 M. F. (carloads)	7.50	@	—
No. 3 M. F. (carloads)	7.25	@	—
No. 1 S. C. (carloads)	8.25	@	—
No. 2 S. C. (carloads)	8.00	@	—
No. 3 S. C. (carloads)	7.75	@	—
No. 1 Coated and Litho	14.50	@	—
No. 2 Coated and Litho	13.50	@	—
No. 3 Coated and Litho	12.75	@	—
Coated tinted	.15	@	—
Wrapping—			
Rag Brown	4.85	@	—
White Rag	5.25	@	—
"B" Manila	5.65	@	—
No. 1 Manila	6.65	@	—
Fiber	6.65	@	—
Kraft, M. F.	7.20	@	—
M. G.	7.35	@	—

Pulp

(F. o. b. Mill)

Ground wood	25.00	@	27.00
Sulphite easy bleaching	58.00	@	60.00
Sulphite news grade	55.00	@	58.00
Sulphite, bleached	75.00	@	80.00
Sulphate			65.00

Old Waste Paper

(In carload lots, f. o. b. Toronto)

Shavings—			
White Env. Cut	3.00	@	—
Soft White Book Shavings	3.00	@	—
White Blk, News	1.50	@	—
Book and Ledger—			
Flat Magazine and Book Stock (old)	1.25	@	—
Light and Crumpled Book Stock	1.10	@	—
Ledgers and Writings	1.40	@	—
Solid Ledgers	1.40	@	—
Manilas—			
New Manila Cut	1.50	@	—
Printed Manilas	1.00	@	—
Kraft	2.25	@	—
News and Scrap—			
Strictly Overissue	.80	@	—
Strictly Folded	.47½	@	.52½
No. 1 Mixed Paper	.55	@	—

Domestic Rags

(Price to mills, f. o. b. Toronto)

No. 1 White Shirt Cuttings	.12	@	.12½
Fancy Shirt Cuttings	.06	@	.06¼

WANT AND FOR SALE ADVERTISEMENTS

HELP WANTED

WANTED—Salesman for small New England mill making specialties. Give age, experience and salary wanted. Address, Box 27-540, care Paper Trade Journal. S-22

EXECUTIVE OR SALES POSITION WANTED WITH MILL OR JOBBER—Have had ten years experience with paper trade and two years as sales manager of large envelope manufacturer selling jobbers. Thoroughly experienced with both fine and coarse papers. Splendid record and references. Married, age 39, and will locate anywhere that opportunity for future is assured. Available after Oct. 1st. Address, Box 27-541, care Paper Trade Journal. S-22

CHEMICAL ENGINEER WANTED for large pulp and paper mill. Graduate of University, Canadian preferred. Give particulars of age and experience. Address, Box 27-529, care Paper Trade Journal. S-29

PAPER TRADE readers find our Service effective in making connections. Individual. Confidential. Personally planned by Jacob Penn, known by all mill owners. Not agency. Jacob Penn, Incorporated, 9 Park Place, New York. tf.

IF YOU are open to overtures for new connection, and qualified for a salary between $2,500 and $25,000, your response to this announcement is invited. The undersigned provides a thoroughly organized service, of recognized standing and reputation, through which preliminaries are negotiated confidentially for positions of the calibre indicated. The procedure is individualized to each client's personal requirements; your identity covered and present position protected. Established sixteen years. Send only name and address for details. R. W. Bixby, Inc., 117 Downtown Building, Buffalo, New York. tf.

WANTED IMMEDIATELY—Tour boss for strawboard mill. Must have experience in .009 strawboard for corrugating. Apply, giving full particulars as to experience and wages required, to the EASTERN PAPER & FELT MILLS CORPORATION, Room 414, Quebec Power Building, QUEBEC, P. Q., CANADA. S-22

SUPERINTENDENT for two-machine mill; Fourdriniers making light weight chip. Must be well up on getting production; repairs, maintenance, designing and new construction; a man able to handle help and get results. State age, experience, reference and salary expected. Only those answering above requirements need apply Address, Box 27-527, care Paper Trade Journal. S-22

CHEMIST WANTED for large pulp and paper mill. Graduate of University, Canadian preferred. Give particulars of age and experience. Address, Box 27-528, care Paper Trade Journal. S-29

WANTED—First-class modern boss finisher for mill making sulphite bond and specialties. Must be able to handle help and work to a system. Address, Box 27-533, care Paper Trade Journal. S-29

MACHINE TENDERS WANTED on cylinder tissues, top felt. Steady work, no dull periods. Address, Box 27-546, care Paper Trade Journal. O-6

WANTED—Superintendent for crepe paper plant in East. Reply, giving experience and reference in first letter. Address, Box 27-547, care Paper Trade Journal. O-13

WANTED—PAPER MILL SUPERINTENDENT experienced in manufacture of box board or like material, having a few thousand dollars to invest in a new board mill where he would have interest in the plant and also take charge of same. Address, Box 27-558, care Paper Trade Journal. S-22

WANTED—An experienced adjuster on a Lockport machine. both flat and square; also on a Potdevin S O S. State experience and salary expected. Steady position for the right man. All communications will be held strictly confidential. Address, Box 27-502, care Paper Trade Journal. tf.

WANTED—First-class practical soda mill superintendent. One who can organize and control help. Address, Box 27-562, care Paper Trade Journal. O-6

SITUATIONS WANTED

A-1 CYLINDER MACHINE TENDER wants position. Have had 19 years experience running machine making all grades of tissue. Thoroughly accustomed to top felt. Sober and steady. Married, have family, and want steady work. Can furnish best references. Address, Box 27-549, care Paper Trade Journal. O-6

A-1 SOBER, CONSCIENTIOUS MASTER MECHANIC wishes change. 26 years at maintenance, construction; Cylinder, Fourdrinier machines; steam, electric and water. Paper making ability. Can guarantee results. Address, Box 27-550, care Paper Trade Journal. S-22

WANTED—First-class man, with 20 years experience on all grades of board, desires position as superintendent, tour boss, or would consider position running machine where I could cover cylinder molds and make coucher rolls. Have been superintendent, tour boss and production manager ot mill making 200 tons a day, with good results. Address, Box 27-551, care Paper Trade Journal. O-6

CHIEF POWER ENGINEER—A. S. M. E. 16 years chief engineer; experience covers boilers, stokers, engines, electricity, pumping stations, compressed air, combustion engines, refrigeration, air conditioning, maintenance. Technical education, honorable, dependable. Address, Box 27-552, care Paper Trade Journal. S-22

COATING MILL SUPERINTENDENT—Graduate chemist, having a well grounded knowledge of manufacture of all kinds of coated, printed, and gummed papers, desires change of position. Address, Box 27-553, care Paper Trade Journal. S-29

CAMERON SLITTER OPERATOR, experienced on all grades of paper, desires new connection. Practical paper maker. References. Address, Box 27-557, care Paper Trade Journal. S-29

FINISHING ROOM FOREMAN wants position. Thoroughly experienced in handling bond, glassine, tissues and wrapping papers. Address, Box 27-544, care Paper Trade Journal. S-22

SUPERINTENDENT open for position. Up-to-date on Kraft, waxing, bond and specialties that test. Familiar with foreign and domestic sulphates and sulphites, on high speed machines. Address, Box 27-548, care Paper Trade Journal. S-29

MILLWRIGHT POSITION WANTED—Man with 17 years experience in paper plants. A first-class machinist; good draftsman; understands maintenance and construction, layout work and costs. References. Address, Box 27-530, care Paper Trade Journal. S-29

PAPER MAKING MACHINERY DESIGNER AND GENERAL PLANT ENGINEER open after September 1st. Long and practical experience on this class of work, together with a number of years selling experience. Address, Box 27-497, care Paper Trade Journal. tf.

PULP AND PAPER MILL ENGINEER, with many years experience in design, construction and maintenance, desires position. References. Address, Box 27-470, care Paper Trade Journal. O-6

TOUR BOSS wishes position. Experienced on most all kinds of paper, also glassine and greaseproof. Address, Box 27-433, care Paper Trade Journal. S-22

SUPERINTENDENT wants position. A practical man on all kinds of board specialties and combination boards. Am good on repairs and maintenance; good handler of help; can get results. Am a hustler. Best of reference. Address, Box 27-518, care Paper Trade Journal. S-22

MILL CONNECTION WANTED—Capable experienced salesman desires mill connection. Years of experience in the sales of both coarse and fine paper. Willing to travel. Highest credentials as to ability and integrity. Address, Box 27-490, care Paper Trade Journal. tf.

POSITION WANTED as paper mill manager or production engineer. Extensive experience on rag and wood pulp papers. Services available at once. Can furnish best of references. Address, Box 27-503, care Paper Trade Journal. tf.

SITUATIONS WANTED

MILL OR PRODUCTION MANAGER—Now superintendent of a well known mill, but want to make a change. A splendid business and paper making experience with an excellent production record. Well educated. Address, Box 27-501, care Paper Trade Journal. S-22

AGGRESSIVE PAPER SALESMAN, of executive ability and wide experience in the manufacture and sale of high-grade Book Papers—coated, uncoated and specialties—wishes to locate with Mill manufacturing book papers as direct representative with opportunity for advancement. Ten years Mill and Jobbing experience and knows book papers intimately, and can introduce new grades and highly profitable specialties. Wide acquaintance with both merchant and converter trade. Would also consider position as sales manager at mill. Highest credentials. Those having a proposition that offers a real opportunity for a high grade man, please address, giving full particulars, Box 27-495, care Paper Trade Journal. S-29

SUPERINTENDENT WISHES POSITION—Long experience on high grade papers. Book, news, hanging; specialties in white and colors. References. Address, Box 27-531, care Paper Trade Journal. S-29

CREDIT MANAGER-BOOKKEEPER: Young man, seven years experience with large paper concern, desires new connection with opportunity for advancement. Address, Box 27-532, care Paper Trade Journal. S-22

MACHINE TENDER—Board machine tender, age 30 years, married, sober. Well up on all grades of box boards and container. Can furnish reference. Available at once. Address, Box 27-491, care Paper Trade Journal. S-22

PAPER MILL EXECUTIVE—Young man, with wide practical experience and good education, desires connection as manager or sales manager. Capable to organize and direct production of various grades of paper. Well trained in financial and sales problems. Best of references assured. Address, Box 27-516, care Paper Trade Journal. S-22

MILL MANAGER OR SUPERINTENDENT—Made all kinds of board specialties, news and manila wrapping. Can furnish best references. Address, Box 27-534, care Paper Trade Journal. S-22

FELT SUPERINTENDENT—Ten years with representative mill making dry felt and asbestos. Desires change. Capable of getting production and quality. Best references. Address, Box 27-523, care Paper Trade Journal. tf.

ASSISTANT SUPERINTENDENT—College graduate, chemist, nine years practical experience and research in rag fine writing papermaking and specialties, desires position with opportunity for advancement. Address, Box 27-320, care Paper Trade Journal. tf.

SUPERINTENDENT wants to make a change. Used to all grades of paper, all makes of machines. Will go any place. Can furnish best of references. Address, Box 27-559, care Paper Trade Journal. S-22

MILLWRIGHT AND CARPENTER—Young married man with 10 years experience desires position. Best of references. Address, Box 27-561, care Paper Trade Journal. S-22

PRACTICAL PAPERMAKER would accept position as assistant superintendent or boss machine tender. Understand all grades of paper from tissue to board, or fine writing. Address, Box 27-560, care Paper Trade Journal. S-22

SUPERINTENDENT—Trained in the manufacture of tissues, all grades, plain and creped; high grade Kraft papers, converting specialties, crepes, waxing, crepe towels, and Kraft, waxed Kraft. Address, Box 27-563, care Paper Trade Journal. O-13

RELIABLE BEATER ENGINEER—Allround experience bonds, books, envelope, Kraft, tissues; suit all weights, test, etc. Go anywhere. Address, Box 27-543, care Paper Trade Journal. S-22

The Priceless Ingredient

In the City of Bagdad lived Hakeem, The Wise One, and many people went to him for counsel, which he gave freely to all, asking nothing in return.

There came to him a young man who had spent much but got little, and said: "Tell me, Wise One, what shall I do to receive the most for that which I spend?"

Hakeem answered: "A thing that is bought or sold has no value unless it contain that which cannot be bought or sold. Look for the Priceless Ingredient." "But what is this Priceless Ingredient?" asked the young man.

Spoke then The Wise One: "My Son, The Priceless Ingredient of every product in the market place is the honor and integrity of him who makes it. Consider his name before you buy."

Shartle Bros. Machine Co.
MIDDLETOWN, OHIO

SHARTLE BROTHERS
DIVISION OF THE BLACK-CLAWSON COMPANY

Paper Mill SHARTLE **Machinery**

WANTED

WANTED—Second hand Slitter approximately eighty inches wide. Address, Box 27-484, care Paper Trade Journal. tf.

WANTED—2 W. & P. Pulpers, 2 Filter Presses and 1 Rogers Wet Machine. Address, Box 27-485, care Paper Trade Journal. tf.

WANTED—Five bowl second hand Calender in good condition, 65 to 70". Address, Box 27-535, care Paper Trade Journal. S-22

WANTED TO BUY—Used Cameron Rewinding machine of not less than 60" width. Must be in good condition. Address, Box 27-554, care Paper Trade Journal. S-29

WINDER WANTED—72 to 80 inches wide, to wind rolls 36 inches in diameter or larger. Address, Box 27-555, care Paper Trade Journal. O-6

WANTED TO BUY—A napkin folder, dryers size 5 to 8' diameter or larger. Address, Box 27-564, care Paper Trade Journal. S-22

WANTED—Experimental paper machine around 24"; either Cylinder or Fourdrinier. Address, Box 27-568, care Paper Trade Journal. S-22

WANTED—A Yankee Dryer, any size or make. Address, Box 27-569, care Paper Trade Journal. S-22

GOVERNMENT BIDS

TREASURY DEPARTMENT, Office of the Secretary, Washington, D. C., September 1, 1927.—Sealed proposals will be received by the Secretary of the Treasury, until 11 o'clock a. m., Thursday, September 29, 1927, from manufacturers of bond, bank-note and other fine papers, for furnishing 400 tons, more or less, of paper of the highest quality of the type developed at the Bureau of Standards, containing the distinctive feature prescribed by the Secretary of the Treasury, required for the printing of United States currency, during the period from November 1, 1927, to June 30, 1928. Blank forms for submitting proposals, together with specifications and further information, will be furnished manufacturers who intend to submit proposals, upon application to the Commissioner of the Public Debt, Treasury Department. C. S. DEWEY, Acting Secretary of the Treasury. S-22

MISCELLANEOUS

CLARK MANUFACTURING COMPANY, Holyoke, Mass. Telephone 1828. Builders of cylinder moulds, couch and felt rolls, dandy rolls. We cover dandies and cylinders tight, for fast running machines. J-5-27

WANTED—Mill ends and job lots in rolls or flats in any quantity, all grades. Also boards. Joseph Goldstein & Sons, 1302-9 N. Halsted Street, Chicago, Illinois. tf.

WANTED—Side or odd lot rolls ten to ninety pound basis. The larger the quantity the better we like it. Address, Box 27-481, care Paper Trade Journal. tf.

SEND YOUR ODD LOT LIST of coarse and fine papers together with samples to Goldman Paper & Paper Stock Co., 414 So. Front Street, Philadelphia, Pa. tf.

ACCOUNTANT—Books opened, closed, audited. Bookkeeping services for firms without bookkeeper. Tax Reports. Emil Mack, 507 Fifth Ave., New York City. Murray Hill 5021. O-13

PAPERMAKER—Expert ability, wants to communicate with capital to manufacture paper that will pay large dividends on money invested. References exchanged. Small mills, this is your opportunity. Address, Box 27-565, care Paper Trade Journal. S-29

FOR SALE

FOR SALE—One 48" x 75" Hooper 2-color press, slotted cylinders, chain feed, clutch pulley. Good condition. Address, Chas. N. Braun Machinery Co., 1831 Lafayette St., Fort Wayne, Indiana. O-6

SITUATIONS WANTED

PULP AND PAPER MILL SUPERINTENDENT—Wants similar position in sulphite or Kraft pulp and paper mill. 40 years old, 18 years practical experience. Graduate chemical engineer. Has done research work on cooking of sulphite and Kraft pulp, bleaching, beating and soda recovery. Also mill construction. At present in charge of production in a Kraft pulp and paper mill. Address, Box 27-566, care Paper Trade Journal. O-27

SALESMAN—Twenty-five years paper business, good appearance, energetic, able to think and plan work, excellent references. Christian, wants connection where hard work and application will count. Available immediately. Address, Box 27-567, care Paper Trade Journal. O-6

FOR SALE

FOR SALE—Nine top dryers, 36" x 88"; nine top dryers, 36" x 102". Journals 4 5/16" with top pedestal bearings 19¼" high and spur gears 39¾" diam. Good condition, immediate delivery, reasonable price. Address, Box 27-537, care Paper Trade Journal. S-22

FOR SALE—On account of change in product we offer for sale, two 96" Moore & White Four Drum Winders complete with pulleys for belt drive. Winders capable of handling 36" and 60" diameter rolls, respectively. Address, Box 27-556, care Paper Trade Journal. S-22

FOR SALE—Two complete paper machine drives with taper cone pulleys 35¼" to 48" diam., 11' 9" long, fitted to shaft 4 5/16" x 16' 9", equipped with 16" Moore & White Patent Transformer belt, variable speed line shaft with bearings and bevel mortise gears, clutch and pulley for each section of machine. Good condition, immediate delivery, reasonable price. Address, Box 27-538, care Paper Trade Journal. S-22

FOR SALE—Second-hand 1200 lb. wood tub N. & W. beater. In good condition. The Noble & Wood Machine Co., Hoosick Falls, N. Y tf

FOR SALE—Fully equipped mill at Lambertville, New Jersey; ready to run for light weight papers. Easy terms. Address, Box 27-521, care Paper Trade Journal. S-29

FOR SALE—6 Used Jones Imperial Jordans, with bronze or steel fillings. Will sell "as is" or factory rebuilt. THE NOBLE & WOOD MACHINE CO., Hoosick Falls, N. Y. tf.

MR. SUPERINTENDENT—Your opportunity. A small complete paper mill with excellent water power, good location. Only $20,000.00, part cash. Address, Box 27-570, care Paper Trade Journal. S-22

FOR SALE

Chuse 28 x 32 engine, arranged for 150 lb. gauge pressure, 150 R.P.M. Equipped with a Crocker & Wheeler 850 KVA, 480 volt, 3 phase, 60 cycle generator without exciter or switch.

A. E. BRIDGE,
Franklin, Ohio. S-22

Fine or Wrapping Paper Lines Wanted on Commission Basis.

After several years of association with paper jobbers and manufacturers, I am organizing my own company to handle paper and allied lines on a brokerage basis, with offices at Chicago and Minneapolis. Can give manufacturers satisfactory representation in Chicago and Northwest. Will furnish excellent references. Age 39. Large personal following in this territory. Address, Box 27-542, care Paper Trade Journal. S-22

FOR SALE

FOR SALE

1—72" Hamblet Single Cutter with 24 roll back stand.
1—84" Beloit heavy duty duplex.
1—84" Black-Clawson heavy duty duplex, with duplex slitter.
1—52" Moore & White Cutter with Moore & White Layboy and Backstands.
1—48" Moore & White Cutter with Moore & White Layboy and Backstands.
1—42" Moore & White Cutter with Moore & White Layboy and Backstands.
1—60" Hamblet Cutter with 10 roll Backstands.
1—110" Moore & White Cutter with Moore & White Layboy and Backstands.
1—82" Heavy duty Hamblet Single Cutter with 24 roll Backstands.
2—58" Moore & White Single Cutters.
4—54" Moore & White Single Cutters.
6—48" Moore & White Single Cutters.
1—87" Hamblet Duplex Cutter. Heavy Duty.

The Shartle Brothers Machine Co.,
Middletown, Ohio tf.

PAPER MACHINES

For Sale

In good condition. Immediate delivery.

One 2 cylinder machine. 2 presses; 10 dryers 42" x 84"; one calender; reel; single drum winder; Marshall drive.

One Fourdrinier machine. Wire 96" x 50'. 2 presses; 13 dryers 48" x 94"; one calender; reel; two drum winder; Marshall drive.

By: FRANK H. DAVIS COMPANY
175 Richdale Avenue Cambridge, Mass.

HEADQUARTERS

For Good Used Machinery

ROTARY DRYERS AND KILNS
6—4' x 30' American Process.
2—6' x 60'.
1—6' x 100'.
1—8' x 125'.

PULPER MIXERS
1—W. & P. size 17-200 gals.
Also several smaller sizes.

TUBE AND ROD MILLS
1—3' 6" x 12' Allis Chalmers.
1—4' x 16' Schmidt.
5—5' x 22' Allis Chalmers.
7—5' 6" x 22' Schmidt.
1—6' x 23' Gates.

SULPHUR BURNERS
1—3' x 8' Glens Falls.
4—4' x 16' Glens Falls.
4—4' x 20' Glens Falls.

EVAPORATORS
1—Stokes Triple Effect, 1,000 sq. ft.
1—Scott Triple Effect, 1,850 sq. ft.
1—Swenson Triple Effect, 1,750 sq. ft.
3—Swenson Triple Effect, 3,300 sq. ft.

ROTARY FILTERS
3—9' x 4' Oliver.
2—9' x 6' Oliver.
2—9' x 6' Oliver, Acid Proof.
1—9' x 9' Oliver, Acid Proof.

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WE BUY YOUR IDLE EQUIPMENT

CONSOLIDATED PRODUCTS COMPANY, INC.
15 PARK ROW NEW YORK, N. Y.
Barclay 8083

FOR SALE

CYLINDER DRYING MACHINES

1—Smith and Winchester, 39 dryers 42" dia., 88" face, 2 cylinders, 1 stack of calenders.

1—Smith and Winchester, 51 dryers, 36" dia., 80" face, 6 cylinders, 2 stacks calenders, slitter and winder.

1—Pusey and Jones, 1 baby dryer 24" dia., 130" face, 72—48" dia., 122" dryers in 3 deck frame, 6 cylinders, 4 presses, 2 calender stacks, reel, cutter and slitter.

1—Beloit and Black & Clawson, 63 dryers 36" dia., 76" face, in 3 deck frame, 8 primary presses, 6 cylinders, 2 cylinder stacks, slitter and cutter.

TECHNICAL ECONOMIST CORPORATION

40 RECTOR ST., NEW YORK, N. Y.

FOR SALE

2—Iron tub Beaters, practically new. Rolls 70 x 66. Made by Emerson Mfg. Co.

1—Wood tub Beater, practically new. Roll 70 x 66. Made by Emerson Mfg. Co.

1—Heavy duty Beloit 114" Paster.

4—Jones Washers. Iron tubs. Rolls 67 x 60. Good shape.

1—Dayton Beater and Hoist Iron tub Beater. A-1. Rolls 64" diameter, 54" face.

1—Breaker Roll 64" diameter by 54" face.

1—Downingtown Iron tub Beater with Brownell Buehler perforated back fall. Rebuilt for immediate shipment. Roll 44" x 44".

The Shartle Brothers Machine Co.

Middletown, Ohio tf.

FOR SALE

1—72" Model 10 Cameron.

11—Dryers 48" x 110".

60" trim Black-Clawson Fourdrinier machine.

Several White cedar stuff chests, A-1 shape.

1—48"—3 cylinder machine.

1—70"—2 cylinder machine.

Several Chippers.

Four deck Beloit frames. These are modern and extra heavy.

One Rythor & Pringle Multiple Saw Slasher. Will cut 32'.

One Farrel Roll Grinder.

One No. 2 Lannoye Pulper.

One 61" Holyoke Super-Calender.

The Shartle Brothers Machine Company

Middletown, Ohio tf.

PAPER MILL

Requiring approximately $500,000

and appraised at over $2,000,000, would be in A-1 shape and could produce at low cost over

100 tons daily of Book and Index

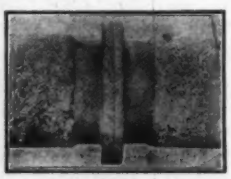
After interest and sinking fund charges, estimated earnings would be over $300,000 annually.

Present capitalization only common stock.

Management would consider consolidation with substantial interests.

Address, Box 27-519, care Paper Trade Journal

8-22



Note: Flange Fits Flush. No Metal on Inside.

Changing the Piping of an entire Industry

It is true that Michigan Wood Pipe with Collar Flanges as illustrated is revolutionizing the Paper Mill Industry. Up to date Paper Mills are making the change as rapidly as possible. Some are changing entire Plant piping at once while others are changing line by line in order that production will not be held up.

The advantages are long life, no discoloration, power saving, larger capacity, light weight, easy to install, easy to take apart without damage, and cheaper.

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Appleton
Felts and Jackets

Naylor Spiral Lock-Seam Pipe

Naylor Spiral Pipe Company

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26 Cortlandt St., New York City | 1367 East 6th St., Cleveland | Witherspoon Bldg., Philadelphia

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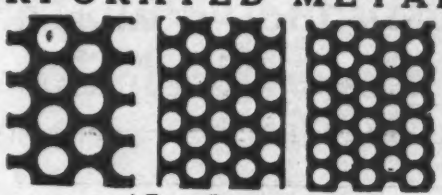

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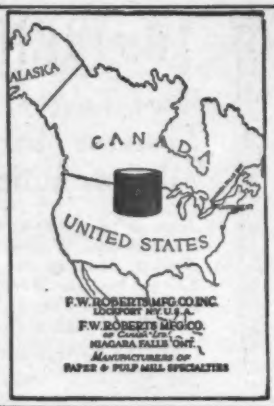

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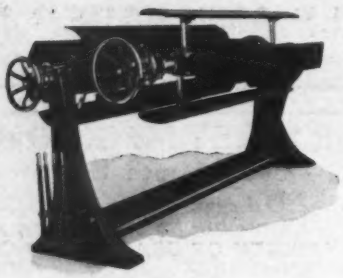

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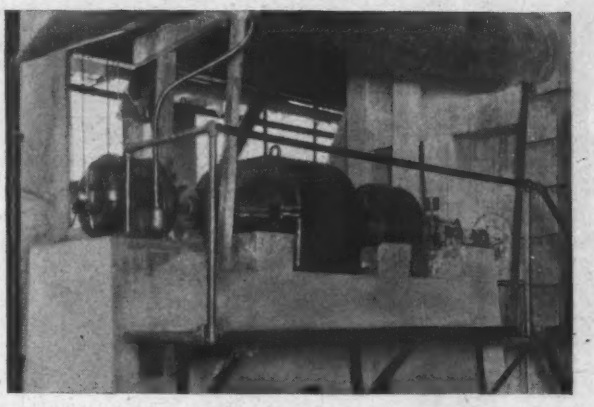

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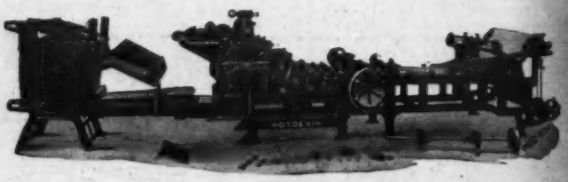

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